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ENVIRONMENTAL INFLUENCES ON THE USE OF HOME CARE ON COMMUNITY-DWELLING SENIORS

by

Lorna Jean Reimer

A thesis submitted to the Faculty of Graduate Studies and Research in partial fulfillment of the requirements for the degree of Master of Science

Department of Occupational Therapy

Edmonton, Alberta

Spring, 1995

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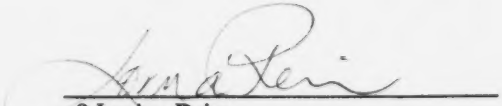

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The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies and Research for acceptance, a thesis entitled Environmental Influences on the Use of Home Care by Community-Dwelling Seniors submitted by Lorna Jean Reimer in partial fulfillment of the requirements for the degree of Master of Science.

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18 April 1995

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ABSTRACT

The purpose of this study was to ascertain the influence of the physical and perceived environment in determining use of home care services. Sixty individuals age 70 and over were sampled according to whether they were home care users or non-users.

No significant differences were observed on the physical and perceived environment measures, nor on the demographic and residential variables except income, which was higher for non-users. Users reported significantly lower scores on social environment, functional ability and perceived health, and used more support services and assistive devices. Logistic regression analysis established that individuals with low functional ability scores were over three times at risk for home care admission and those with poorer health over two times at risk.

Recommendations for further analysis of the environment and person-environment fit are given. To assist aging in place, various housing, technical and human support options must be available.

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CHAPTER I

THE RESEARCH PROBLEM

It has long been advocated that maintaining the elderly in their home environment is preferable to long term institutional care, not only for the potential reduction in health care costs but also the positive impact on personal well-being (Chappell, 1990b). Declines in physical health, sensory and cognitive abilities as well as societal restrictions, leave older persons especially vulnerable to the effects of their environment and less able to adapt it (Carp, 1987; Christensen & Carp, 1987; Lawton, 1986). Furthermore, several environmental factors including safety, aesthetics and accessibility directly impact feelings of well-being, social interactions and the ability of the elderly to carry out daily activities (Roff & Atherton, 1989). To date, little attention has been given to older persons who do reside independently in the community (Kendig, 1990) and to considerations that could enhance supportive functions of their homes (Lawton, 1989).

To assist the elderly to remain independent and reduce the rates of institutionalization, Alberta's Coordinated Home Care Program (CHCP) provides professional health services and home supports to assist individuals, the majority of whom are over 65 years of age, to remain at home. Several factors though influence the ability of elderly persons to live independently including health, individual traits, home environments and the social milieu, which are not well understood (Carp & Carp, 1984). Knowledge of the specific interactions between humans and their physical and social life spaces that determine a satisfactory person-environment fit are needed, as well as how these interactions are affected by the aging process (Bernardin-Haldemann, 1988).

The purpose of this study was to examine the home environments of elderly community-dwelling individuals and to ascertain the influence of the environment in determining use of home care services.

CHAPTER II

LITERATURE REVIEW

While 90% of the population over age 65 reside in their own homes or in boarding homes (Chappell, 1990a; Senior's Advisory Council for Alberta, 1992a), an increasing number of those in the community are the frail elderly who are cared for by family and home support services (Carp, 1987). Home care services usually include both professional health care and support services such as homemaking and personal care, primarily to maintain elderly persons in the community and delay or prevent institutional care (Alberta Health, 1992; Beland, 1986; Chappell, 1985).

Determining whether elderly individuals should continue to live on their own, when they are ready for discharge from hospital to home, or what assistance is needed to maintain community living, are difficult decisions. In Alberta, the CHCP completes comprehensive assessments on health status, self care skills, and formal and informal supports for admission to the CHCP and to long term care institutions (Alberta Health, 1989). This process though gathers little information on the physical environment, and what is gathered is not utilized systematically when determining need for services or institutionalization. This suggests that determining a satisfactory person-environment fit, whether to remain at home or enter an institution, is haphazard and focuses primarily on individual traits.

But even if detailed measurements of the physical environment and the individual were accurately assessed, the interactions between the two are only minimally understood. The environment is not limited to a singular item, but encompasses the personal, social,

neighbourhood and political milieu as well. Thus person-environment fit is not only complex but perplexing to quantify and qualify. Nonetheless, it has generated theories and engaged researchers from various fields.

Person-Environment Fit

Several models of person-environment fit have been developed to try to explain the interrelationships between the individual and the environment (Law et al., 1992). These relationships are recognized as complex, that is, behaviours are not merely a direct influence of the environment on the individual or vice versa, but are a function of the interaction between the individual and the environment. Demonstrating that these models are valid in the real world though has met with limited success (Christensen, Carp, Cranz & Wiley, 1992; Wister, 1989).

The ecological model of aging widely referred to throughout the gerontology literature (Kendig, 1990; Law et al., 1992; Lawton, 1986; Roff & Atherton, 1989; Wister, 1989), posits that a satisfactory person-environment fit is the balanced interaction of the individual's competencies with the press or demands of the environment. The satisfactory outcome is observed as the individual's adaptive behaviour and positive affect. Although elderly persons face declining abilities, studies have shown this balance between person and the environment can be achieved by the individual adjusting psychologically (Wister, 1989) or altering physical environment features to create a more restricted, yet safe and functional physical environment (Lawton, 1990).

Other models of person-environment fit for the elderly include personal needs or preferences along with individual competencies. Kahana's (1982) congruence model of person-environment interaction postulates that the environment has a significant influence

on attitudes, activities and the well-being of the elderly, and that individuals will seek and find environments congruent with their needs. Kahana's model was originally designed for institutional settings although it has been applied in community studies of congregate residences.

Carp and Carp (1984) developed the concept of need further by differentiating two distinct levels, either lower-order or life maintenance needs, or higher-order life satisfaction needs. Their complementary model of well-being is no longer a continuum but imposes a threshold limit whereby competence is crucial below a certain threshold in order to meet the life maintenance or lower-order needs, but above the threshold it is important for life satisfaction with no direct influence on individual functioning. This model is notably complex and research has failed to support the hypothesis (Christensen et al., 1992).

Environments and person-environment interactions though are not easily defined nor readily differentiated for assessment or research purposes. Varying taxonomies of the environment can be used depending on the model chosen and the degree of detail being studied. Lawton (1986) concedes that the environment is not a singular element and must include a person's perceptions as well as the physical or built environment. The social environment is also a primary influence in person-environment relations and is classified and assessed in diverse forms throughout the literature.

In occupational therapy, the individual's mental, physical, socio-cultural and spiritual self engages with physical, social and cultural environments permitting the individual to participate in leisure, self care or productivity tasks (Reed & Sanderson, 1992). Facilitating the individual's engagement with his or her environment to achieve a balanced, healthy lifestyle is the role of the occupational therapist (Canadian Association

of Occupational Therapists [CAOT], 1991) but the individual's needs and preferences guide the activities or skills chosen. Thus, individuals are perceived as both affecting the environment and being affected by it (CAOT) which is congruent with the constructs of person-environment fit. Corcoran and Gitlin (1992) have demonstrated that occupational therapists can utilize a person-environment model within their practice by assisting caregivers to adapt the environment and activities, thereby enhancing the performance of elderly individuals with dementia. Occupational therapists have traditionally been involved with individuals to enhance skill performance and in modifying environments to ensure accessibility or safety, but are now recognizing the influence of the broader environment on performance and the significance of evaluating total person-environment fit (Cooper & Hasselkus, 1992; Law et al., 1992).

Elements of Person-Environment Fit

Both occupational therapy's client-centred practice model, focusing on the individual's performance, and Lawton's (1986) ecological model of aging's classification of environmental levels, were used to guide in the selection of appropriate elements for this research. The focus of this study was the individual and his or her immediate physical and social environment, that is, the home environment. The following elements of person-environment fit were chosen from the literature to examine. Environmental factors are discussed first, followed by personal factors.

Environmental Factors

Physical Environment

The physical environment is too often neglected and inadequately assessed when

the abilities and independence of elderly persons are examined (Christenson, 1990). Studies often focus on the social and community environment with little emphasis on behaviours or subjective responses that may be attributed to the demands of the physical environment (Keen, 1989; Lawton & Cohen, 1974). There is little consensus regarding what comprises the physical or objective environment and how they should be measured (Christensen & Carp, 1987; Golant, 1986; Keen, 1989). Researchers have studied structural issues such as roof damage and room layout (Struyk & Katsura, 1988) to detailed analysis of all physical features including appliances (Christensen & Carp). Measurement of physical environment experiences have included such subjective factors as "having good times in the community and neighbourhood, having memories about one's personal things" (Golant, 1986, p. 39). Much of the literature addresses only congregate or other group residences for the elderly population (Kendig, 1990; Moos & Lemke, 1985), with few studies of residential housing environments.

It is known that the residences of elderly individuals are usually in poorer condition and frequently include barriers such as stairs, inadequate lighting, no safety features and poorly arranged storage (Lawton, 1986). Few households report special or accommodating features, but those that do are more likely to be from frail elderly persons with limited mobility or medical conditions (Reschovsky & Newman, 1990; Struyk & Katsura, 1988).

In a study on home help in Sweden, Thorslund, Norstrom and Wernberg (1991) found no significant relationship between use of home help and housing conditions. Housing conditions were all self-reported and comprised only three dichotomous items: presence of indoor stairs, poor condition or location of the bathroom, and other housing inconveniences. Home help in Sweden is the responsibility of social services, not health,

and in addition to homemaking and personal care services includes shopping. Generalization or comparison of these results to other settings is limited because of differences in home care programming and simplistic measurement of housing conditions.

Inconsistent measurement of the physical environment has left huge gaps in our knowledge of person-environment fit of elderly persons living in residential homes. These variables must be clearly defined focusing on the specific elements of person-environment fit being tested (Christensen et al., 1992). The variables that are most amenable to change should also be given highest priority in research to appropriately influence policy and planning (Carp & Carp, 1984). The immediate physical environment is one tangible component that can be readily altered to enhance person-environment fit (Bernardin-Haldemann, 1988), thus must be included in assessment of person-environment interactions.

Perceived Environment

Despite physical disadvantages, elderly persons are often highly satisfied with their homes and their neighbourhoods (Christensen & Carp, 1987; Lawton, 1986). The emotional ties and symbolic meaning of their homes and environmental features, create an attachment for older persons to their homes and a reluctance to move (Ward, La Gory & Sherman, 1988). The majority are home owners and have lived in their homes longer than younger age groups, creating a strong emotional bond and sense of responsibility to the home and neighbourhood (Lawton, 1989). Christensen et al. (1992) found that structural adequacy and maintenance quality did explain a small but significant portion of subjective housing evaluations, but that for the oldest old (80+ years) and for all elderly home owners, a familiar housing environment was more important than physical housing

conditions.

Subjective responses to the environment are difficult to quantify, nevertheless, they are profoundly intertwined with person-environment fit (Keen, 1989). An individual's perceptions of the environment have been reported to influence behaviours distinctly from the social and objective environment (Lawton, 1989). As well, these perceptions are changed when the individual, facing losses in health or functional status, or social contacts, strives to maintain continuity and a sense of person (Rubinstein, 1989). The quality of environments should also be measured by the "richness of their psychological and sociocultural meanings as well as in relation to physical comfort, safety and performance criteria" (Stokols, 1990; p. 642).

Social Environment

The environment is also a result of social and cultural influences, and the individual's perceptions of these (Ward et al., 1988). The physical environment, including the use of architectural design, colour and space, has also been postulated to influence the frequency and quality of social contacts which ultimately influences social supports (Fleming, Baum & Singer, 1985). But the social environment, including social supports and social networks, is in need of constructs that are consistently defined, ordered and operationalized to allow for appropriate measurement (Antonucci, 1990; O'Reilly, 1988).

The bulk of support for seniors, both instrumental and affective, is provided at the personal level by family and close friends (Chappell, 1990b). Supports can thus be readily quantified, but recent literature has sought to understand the qualitative aspects, such as whether receivers feel support was adequate, whether they ask for help, or whether they are satisfied with the relationship (Antonucci, 1990). Social support is recognized as a

multifaceted concept (Antonucci; Weinert & Tilden, 1990) which is given as a function of an individual's social network (O'Reilly, 1988). Qualitative aspects of social support generally include expressing affection or intimacy, affirming or endorsing others, and giving instrumental or symbolic aid (Black, 1985; Brandt & Weinert, 1981).

Formal and informal social supports are known to delay or reduce the risk of institutionalization, and generally improve well-being and the degree of life satisfaction of the community residing elder (Antonucci, 1990; Bear, 1990). It is also well recognized that increasing numbers of supports are required with advanced age and for those who live alone (Antonucci; Bernardin-Haldemann, 1988; Chappell, 1990b; Thorslund et al., 1991).

Personal Factors

The literature delineates few direct relationships between personal factors and the environment (Lawton, 1986). But, several studies have examined personal factors in relation to home care use. It is well known that greater proportions of females and persons of advanced age utilize home care services (Beland, 1986; Branch et al., 1988; Chappell, 1985; Fredman, Droge & Rabin, 1992; Kempen & Suurmeijer, 1991; Solomon et al., 1993).

Functional Ability

Functional limitations, i.e. difficulty with ADL and with instrumental activities of daily living (IADL), are consistently reported as the strongest and most significant determinants of home care use (Beland, 1986; Branch et al., 1988; Fredman, Droge & Rabin, 1992; Solomon et al., 1993). Fredman et al. listed difficulties with eating, mobility outside, shopping, housework, dressing and bathing as the strongest ADL and IADL risks

for home care use. Toileting and cooking limitations were significant in univariate analysis but not in logistic regression due to collinearity with other ADL and IADL measures. Help with housework, going outside, and cooking were most frequently required in all three home care samples reported by Beland.

Health Status

Despite increased numbers of health problems that double those of younger adults, the majority of elderly persons rate their own health good to excellent (Health & Welfare Canada, 1985). But older adults also account for the majority of Canadians reporting poor health (Health & Welfare Canada). Studies have found that home care users were three (Branch et al., 1988) to seven (Fredman et al., 1992) times more likely to rate their health as poor than age matched non-home care individuals.

Physical health symptoms and socially ascribed status resources (income, ethnicity) correlate strongly with satisfaction with the home and neighbourhood (Christensen & Carp, 1987). Stoller (1984) concluded that self-rated health of elderly persons in the community was influenced by both social supports and the demands of the environment. Declines in health limiting the ability to maintain former residences has been cited as a frequent reason for choosing to move to seniors residential complexes (Shapiro & Tate, 1988).

Cognitive Impairment

Branch et al. (1988) found cognitive impairment, designated at five or more errors on the Short Portable Mental Status Questionnaire was significantly associated with home care use. Individuals with cognitive impairment were three times more likely to be home

care users than persons with higher scores. Cognitive impairment was also identified as a risk factor by Solomon et al. (1993), but was removed in their final predictive model due to its strong association with ADL and IADL impairments.

Income

In the Netherlands, low income has been found to correlate strongly with home care use even when physical limitations were controlled for (Kempen & Suurmeijer, 1991). But as services were conditional to one's ability to pay, persons with higher incomes may have hired private care providers rather than pursued home care. The Alberta CHCP does not exclude persons with higher incomes, but does charge for homemaking services based on the ability to pay, thus may be similar to programs in the Netherlands. Using multivariate analysis, low income was not associated with home care use in a large prospective study in Boston (Branch et al., 1988). However, a reverse relationship was reported by Fredman et al. (1992), where high incomes were significantly associated with home care use.

Other

Marital status, living arrangements, informal supports, and other demographic variables have also been examined frequently in relation to home care use with varying results. Branch et al. (1988) found no risk of home care use for education, marital status or living arrangements but reported a relative risk of 1.85 for limited informal supports. In a national American study comparing home care users to those using community services or no services, Fredman et al. (1992) reported home care users were significantly more likely to live with others (including spouse). In a Manitoba sample, home care users

were significantly less likely to be married, live in their own homes and have informal social supports (Chappell, 1985).

Summary

Theories of person-environment fit appear logical and appropriate. However, the range of environmental factors which may impact on older persons' abilities to live independently are numerous and the interactions are not well understood. This creates a concern for how decisions are made regarding residential options for elderly individuals, including whether to remain at home, move to an apartment or adult foster home, choose in-home services, or move to a long term care setting. Research is especially sparse on assessments of the physical environment resulting in little knowledge of the potential interactions between the individual and the physical environment. Several studies have examined health, functional ability and social supports as risk factors for home care use but these results have rarely been correlated to the physical environment, especially non-congregate residences. The environmental attributes influencing community living of elderly persons, especially when a change in residence or supports are needed, require further investigation.

CHAPTER III

RESEARCH OBJECTIVES

The **primary objective** of this study was to determine whether home care users (users) varied from non-home care users (non-users) on measures of the physical and perceived environment. The literature identified three potential intervening variables for home care or non-home care use, namely social environment, functional ability, and perceived health status.

The hypothesis was that users and non-users would differ on measures of:

a) physical environment;

b) perceived environment;

c) social environment;

d) functional ability; or

e) perceived health status.

Significant variance between the users and non-users was anticipated for both functional ability and perceived health status. It was hypothesized that users would have lower functional abilities scores indicating greater functional dependence, as well as poorer perceived health scores. Social environment scores were also expected to be lower in the user group, because this population often lives alone and tends to be more home-bound making fewer social contacts.

The literature provides insufficient data to hypothesize on the direction or degree of variance between users and non-users on the physical and perceived environment variables. It is known that the elderly population wants to remain in their own homes. If

difficulties with the environment are encountered because of declining functional abilities, users may feel less satisfied with their homes resulting in lower perceived environment scores. It was anticipated that physical environment scores would be lower for users, as home care personnel report users with functional disabilities require a number of home modifications and/or assistive devices to enable them to live at home safely and independently.

As research on environmental factors and aging as a whole is sparse, a **secondary objective** was to provide descriptive and comparative information for users and non-users on the physical and perceived environments, residential variables (e.g., type, style and age of home, length of residence, rural/urban status) and support services (other than home care) used.

CHAPTER IV

RESEARCH METHODS

Study Participants

Two samples of community-dwelling individuals, age 70 years and over, were assembled according to whether they had been recently admitted to the home care program or not. More than 80% of individuals admitted to home care are 70 years and over (Alberta Health, 1994), thus age 70 and over was used to ensure a representative sample of home care users was selected. Selecting recent admissions to home care was necessary to minimize any interventions made by home care personnel, especially home modifications, from influencing the study outcome.

The home care group (users) were a convenience sample selected from individuals newly admitted to the Sturgeon Health Unit (SHU) Home Care Program for long term needs, i.e. long term is designated as requiring services for longer than three months. The non-home care users (non-users) were a systematic random sample from the Sturgeon Health Unit, Public Health Program, Flu Vaccination Records for 1993. All individuals with previous admissions to the SHU home care program for short or long term services were excluded, to avoid any influence that home care services may have had on environmental change or choice. Individuals living in congregate residences with in-home services such as meals, laundry and house cleaning, were also excluded. Individuals who were non-English speaking or had language impairments were excluded as questioning and responding to the interview would be difficult.

Initially individuals were to be selected from only two office areas of the SHU for

ease of data gathering. As this provided a much lower number of users in the first two months than anticipated, the study was expanded to select users from all five areas of the SHU. At this point in the study, more non-users than users had already been interviewed, thus the selection of non-users was only expanded to four areas. Although this provided disproportionate geographical representation, the three areas added were similar in population size, cultural backgrounds and distance from large urban areas. These factors help to minimize this limitation of sample selection.

Cognitive status was identified in the literature as a potential risk for home care use but appeared not to be a factor influenced by the environment. As this research required indepth discussion during the interview process, cognitive impairment could possibly interfere with accurate and complete collection of the data. Therefore individuals with moderate and severe cognitive impairment as designated by a score of six or lower on the Short Portable Mental Status Questionnaire (SPMSQ) (Pfeiffer, 1975) were screened for exclusion from this study. (See Appendix A for permission to use this questionnaire.) The SPMSQ is described as "a sensitive and specific screening test for moderate to severe dementia both in the community and in hospital" (Erkinjuntti, Sulkava, Wikstrom & Autio, 1987, p. 412). Using a cut-off score of 6 or lower, the SPMSQ has been found to have a sensitivity of 66.7% and a specificity of 100% in community samples (Erkinjuntti et al., 1987). Although Erkinjuntti et al., suggest a cut-off point of 7 or even 8 can be used to screen moderate to severe dementia, the sole use of screening tools for distinguishing levels of cognitive impairment is not recommended (Berg, Farrar Edwards, Danzinger, & Berg, 1987).

Given the five independent variables to be assessed, a total sample size of 60 individuals was set with $\alpha = .05$, and $\beta = .20$. This allowed for a power level of .80 to

detect a variance of 20% (Appendix B). Sampling of both users and non-users continued until the total of 60 (30 per group) was reached which was completed in just over five months from May to November, 1994.

Data Collection

The research proposal was reviewed and supported by the SHU's Chief Executive Officer and Medical Officer of Health, Dr. Alan Murdock, the Director of Home Care, Mrs. Carol Sims, and the Director of Family Health Services, Mrs. Janet Thorpe (Appendix C), who gave approval to access client files for the sample selection. All eligible individuals were mailed a letter (Appendix D) briefly outlining the purpose of the study and their potential involvement. Each letter was followed by a telephone call from the principal investigator to ascertain their willingness to participate in the study and to set up an appointment for the in-home interview.

All in-home interviews were carried out by the principal investigator and completed in one home visit. All individuals were reassured that their participation was voluntary and that participation or withdrawal from the study would not in any way affect any of the health unit services they received at that time nor in the future. All participants signed a consent form (Appendix E). Confidentiality was ensured through numerical coding of questionnaires, and no data nor the fact that users nor non-users participated in this study was entered in any health unit client records. One non-user mailed the completed questionnaire and consent form back to the investigator as he was unable to attend the in-home interview. The interviews varied from 1.25 to 2.75 hours in length.

Interviews with users were made as soon as possible after home care admission to

minimize the influence of home care intervention on any of the independent variables. The exact length of time from home care admission to interview was not formally tracked, but varied from approximately one week to three months after admission. Longer lengths of time were not frequent, and due primarily to delays in reporting by the home care coordinator and to participant preference and health status. All housing features changed following home care admission were scored as not present for the physical environment measure. Remaining measures were scored as reported at the time of the interview. No attempt was made to estimate scores at the exact time of admission to home care.

Information was collected using a standard questionnaire form (Appendix F). The questionnaire and measurement tools were pretested on three elderly persons, two home care users and one non-home care user for clarity, length and acceptability of procedures. No changes were made following the pre-test.

SHU home care coordinators and clerical staff were also informed of the nature of the project in the event that potential participants called or asked questions. Coordinators and clerical staff were not informed of who did or did not participate in the study. Except in three or four cases where clarification was required as to which home care services the user had received, no other information was shared with coordinators or clerical staff.

After two-thirds of the sample were interviewed, comparisons between groups were made to assess the influence of potential confounding variables, specifically age, gender, and years of education. Sampling of the remaining non-users could then be adjusted to more closely approximate users and thus control for possible differences that might influence the outcome. No difference was observed in mean age and mean years of education, but the user group had a higher proportion of females than non-users. Thus the remainder of the non-user sample was selected from females only.

Dependent and Independent Variables

The **dependent variable** was the nominal variable with two categories of home care or non-home care user.

The **independent variables** collected included:

a) Physical environment. This variable was measured using the Questionnaire on ADL from the Assessment Tool (Maltais, Trickey, Robitaille & Rodriguez, 1989). The Assessment Tool was developed to identify, implement and evaluate minor home modifications that could enable frail older individuals to maintain or improve their independence in ADL and IADL. It consists of four parts: characteristics of both the resident and the home, questionnaire on ADL, and conclusions and recommendations. It is designed to be used for self-assessment or by others.

As this is a newly developed tool, validity and reliability studies are few. No similar physical environment assessments are available for concurrent validity studies, but the authors consulted with groups of experts to establish content completeness, clarity of meaning and appropriate organization (Maltais, Trickey & Robitaille, 1988). Inter-rater reliability testing for housing adaptation recommendations was completed with two occupational therapists and corrections were made in wording and test order on substeps with very weak agreement (Robitaille, Maltais, Trickey & Shatenstein, 1988). This tool is reported as adequate for inter-rater reliability and content validity (no data were given), adequate being defined as having one or two studies completed (Law et al., 1992), and as promising and extensive (Cooper, Ahrentzen & Hasselkus, 1991).

The Questionnaire on ADL contains four columns: functional limitations, a home check-list, housing recommendations and other recommendations. The housing recommendations column was used to assess the physical environment, thus each item

recommended could be scored present or absent. The Assessment Tool can be used to separately assess selected functional limitations, or rooms of the home, thus several items were repeated in overlapping areas, such as water temperature, and lever faucets at the same sink. These repeated items were removed, and it was assumed that the remaining 368 items were equal in weight.

Each participant was assessed on the housing recommendations regardless of their functional abilities. Recommended conditions in place were given a score of 2 and those not in place, a score of 1. To prevent missing data from skewing the total, items originally scored not applicable were recoded or removed from the total, e.g. if no built-in oven existed, the individual was not penalized for not having a shelf below it (item 42.1). Items with fewer than 50% of the participants responding were removed from all the test scores, as estimating a response was deemed inappropriate. These included items on the elevator, intercom, dishwasher, garbage chute and outside clothesline. Items that were recoded, generally had "not applicable" responses from four or fewer participants, and the modal response was used as the replacement score with the following two exceptions. Four participants (two users and two non-users) did not have any stairs thus these items were all recoded as '2' for 'yes' to reflect the positive nature of no stairs. The second exception was for two users who did not have showers. Scores from their conditions on the bathtub were used to replace the missing shower items. Thus the range of possible scores was 356 to 712 with lower scores implying poorer housing conditions or features.

b) Perceived environment. This variable was measured using the subscale of Perceived Environment from the mid-length Multilevel Assessment Instrument (MAI) (Lawton, Moss, Fulcomer & Kleban, 1982). (See Appendix A for permission to use this tool.) The MAI was designed to measure the well-being of elderly individuals living in the

community, and adheres to the Ecological Model of Aging (McDowell & Newell, 1987). Lawton et al. report that since domains were analyzed separately, domain scales or subscales may be extracted from the total scale for special use. The mid-length MAI was chosen because several questions on the full-length subscale asked about access to public transportation and services, items that may be irrelevant for rural or small community dwellers where such services are frequently non-existent.

The mid-length Perceived Environment subscale is comprised of 12 items in three content areas of housing quality, neighbourhood quality and personal security. Two items are answered yes or no and given a score of 2 for yes, and 1 for no. The remaining 10 items are scored on a three-point Likert type scale, and one item a four-point. Thus the range of scores is 12 to 35 with higher scores indicating greater levels of environmental satisfaction.

The coefficient for test-rest reliability of the full-length subscale was .74, and .81 for internal consistency (alpha coefficient) (Lawton et al., 1982). Internal consistency for the mid-length subscale was somewhat lower at .52, and no test-retest reliability coefficient was given (Philadelphia Geriatric Center). Correlations of the mid-length subscale with (a) the full-length index was .82, (b) interviewers' ratings was .40, both significant at $p<.01$ (Lawton et al.). Internal validity (correlation of the domain with individual items) for this subscale was reported as only adequate, with an R^2 of .19 for the full-length and .17 for the mid-length (Lawton et al.).

In addition to using this scale, seven questions were developed by the researcher to further measure "feelings about home" (Appendix F, page 89). These additional questions provided information about participants' feelings of home that were not captured in the MAI, e.g. attachment to and supportiveness of surroundings and

household objects, and memories of home.

The seven questions to measure "feelings of home" were scored on a 7-point Likert scale with 7 indicating strongly agree and 1 strongly disagree. The total score from these seven questions was analyzed separately from the MAI score for additional input on the perceived environment. No testing for validity or reliability was completed on this scale.

c) Social environment. This variable was measured with Part II of the Personal Resource Questionnaire (PRQ85) (Weinert, 1988). (See Appendix A for permission to use this tool.) Part II consists of 25 items measured on a 7-point Likert scale that assesses the perceived level of social supports. The possible range of scores is 25 to 175 with higher scores indicating high levels of perceived support. The construct of social supports in the PRQ85 was originally hypothesized to be fivefold but the authors have since acknowledged a three-factor structure: intimacy/assistance, integration/affirmation, and reciprocity (Weinert & Tilden, 1990). Internal consistency on Part II has been reported as strong, ranging from .88 to .93 (coefficient alpha) (Weinert). The PRQ85 has correlations of .53 to .58 with a similar support subscale, the Cost and Reciprocity Index, demonstrating moderate construct validity (Weinert & Tilden).

d) Functional ability. This variable was measured using the Questionnaire on ADL from the Assessment Tool (Maltais et al., 1989). The Questionnaire on ADL assesses 73 ADL and IADL tasks in ten areas: general accessibility; getting up, dressing and tidying the bedroom; bathing and personal hygiene; using the toilet; preparing meals; doing the laundry; cleaning the house; using the telephone; enjoying leisure/doing business; and taking medication. This tool was chosen as it provided a broad range of ADL and IADL functions, and as the functional tasks were related to housing features, the associations

between the person's functional ability and the physical environment could be more easily separated for comparisons of person-environment fit.

Reports on reliability and validity in the literature discuss the Assessment Tool as a whole and not its specific components. The authors consulted with groups of experts to establish content completeness, clarity of meaning and appropriate organization (Maltais et al., 1988). The Assessment Tool is reported as adequate for inter-rater reliability and content validity (no data were given), adequate being defined as having one or two studies completed (Law et al., 1992), and as promising and extensive (Cooper et al., 1991). (See section on "Physical environment" for details.)

Data was collected through self-report and observation. Each participant was given a score of 2 if he or she was able to perform the task alone and without difficulty, and a score of 1, if unable to perform. To avoid differences in the total possible score, items scored not applicable were recoded or removed. These items included use of the front balcony, showering, use of the elevator, doing the laundry (one non-user did not do laundry), house cleaning and shaving. As a majority of participants did not have balconies or elevators, and did not shave (39 were female), these items were removed. Scores for showering items were recoded to match the participant's scores for bathing. The participant's modal response was used to recode laundry and housecleaning items. One item on 'opening containers, cans and jars' was inadvertently omitted on the final copy of the interview questionnaire and was therefore not asked. The remaining range of possible raw scores was 69 to 138 with higher scores indicating independence and autonomy in ADL and IADL tasks.

e) Perceived health status. This variable was measured using a single age-referenced question on health answered on a 5-point continuum "excellent, good, fair,

poor, bad". Self-reported health is deemed a strong and valid predictor of mortality in the elderly population, stronger than objective health measures and gender (Idler & Kasl, 1991; Mossey & Schapiro, 1982). One hypothesis for this strong relationship is that individuals are more sensitive to psychosocial variables and other cues about their health that are not observed with objective measures (Idler & Kasl; Rakowski, Fleishman, Mor & Bryant, 1993). Although self-rated health has only been linked with one health outcome (death), its strength and stability over other objective health measures, such as type and number of diagnoses or medications, indicate that self-rated health should be regarded as a valuable measure of health status.

Demographic Variables

Demographic information was collected to determine whether the samples of users and non-users were representative and similar on factors not addressed as independent variables but which may have influenced home care use. Age, gender, marital status, income and living arrangements were identified in the literature as risk factors for home care use, thus were potential confounding factors in this study.

a) Age was measured in years.

b) Gender was recorded male or female.

c) Marital status of married, single, widowed or divorced/separated was recorded as well as the number of years married.

d) Income was categorically scored using the ranges from the annual net household income on the "Home Care Billing Status Form" (Appendix G).

e) Living arrangements were scored as lives alone, with spouse only, with spouse and others, or with others. The total number living in the household was also recorded.

f) Education was recorded as the number of years of formal education completed.

Residential Variables

Information on residences and communities was collected to determine whether the samples of users and non-users were representative and similar on factors not addressed as independent variables but which may have influenced home care use or physical and perceived environment scores.

a) Owner/renter status was recorded.

b) Age of home was recorded in years.

c) Residential tenure was scored as the number of years the participant had lived in the home.

d) Community tenure was scored as the number of years the participant had lived in the community or area.

e) Dwelling type was recorded as single family, duplex or multiple family, or apartment.

f) Dwelling style was recorded as bungalow, two-storey or split.

g) Urban/rural status was recorded as small city (for St. Albert, population approximately 45,000), town (for those living in towns with populations between 1,000 and 10,000), rural non-farm (acreages and towns or villages of less than 1,000 population) (Keating, 1991), and farm.

h) Housing questions. Four additional housing questions were created to identify areas or rooms that participants found supportive and not supportive, areas or rooms not used, and changes made to the home to make it easier to live (Appendix F, page 89). These four questions were used for descriptive purposes and between group comparisons.

These additional questions were intended to provide information about the participant's use of the home environment and permit analysis of the physical environment scores in relation to patterns of use or home modifications, or to match certain areas of use or supportiveness with functional ability. The question on changes made for ease of living was asked to identify those individuals who may have adapted their environments to assist declining functioning, describe the type and numbers of changes, and potentially analyze the specific person-environment fit. (The questions were developed by the researcher based on the literature and personal experience as a home care occupational therapist.)

Support Variables

Data on the home care services, other support services and aids used was recorded for between-group comparisons and to check representativeness of the user and non-user groups. For users, a yes or no was scored for any home care service used in the previous month, and both users and non-users were categorized paid, volunteer or none for any other services used such as homemaking, personal care, professional (nursing, social work or therapies), meals, yard or home maintenance, day support, delivery, transportation and visitor. Aids used were recorded with a yes or no for each type of aid or assistive device (Appendix F, page 113) used and the total number used. Aids were also recorded within the physical environment measure, but a separate tally was made to clarify the number and specific types used, and to facilitate the statistical analysis.

Data Analysis

Both descriptive and inferential statistics were employed to describe and compare users and non-users on the independent variables and on the demographic, residential and

support information. Logistic regression analysis was used to determine which variables predicted home care use and their relative importance. Correlations between residential and environmental variables were calculated. All statistical tests were deemed not significant using an alpha level of .05. Although the hypotheses were directional, to be conservative in determining significance, 2-tailed tests were used throughout. All statistics were analyzed using the SPSS for MS Windows Release 6.0 and Release 6.1 (SPSS, 1993 and 1994).

CHAPTER V

RESULTS

Characteristics of Non-participant Groups

The characteristics of those who refused or were unable to participate are summarized in Tables 1 and 2. Participants and non-participants were compared on the basis of age, gender and locale in order to determine if they varied in any systematic way which might bias study results. No statistically significant differences were found between home care users and home care user non-participants (Table 1), nor between non-users and non-user non-participants (Table 2). Users had a greater proportion of females than user non-participants. While this difference was not significant, significance would likely occur with larger samples given these proportions.

TABLE 1
COMPARISONS OF USERS AND USER NON-PARTICIPANTS

	Users n=30		Non-Participants n=28		p=
Mean Age	78.43		80.25		t[df]=-1.18[56], NS
SD	5.60		6.05		
Range	71 - 89		70 - 89		
Gender	%	n	%	n	
Female	73.3	22	50.0	14	X^2[df]=2.82[1], NS
Male	26.7	8	50.0	14	
Locale	%	n	%	n	
St.Albert	33.3	10	32.1	9	X^2[df]=.957[4], NS
Westlock	23.3	7	28.6	8	
Morinville	16.7	5	21.4	6	
Barrhead	20.0	6	14.3	4	
Redwater	6.7	2	3.6	1	NS = not significant

TABLE 2
COMPARISIONS OF NON-USERS AND NON-USER NON-PARTICIPANTS

	Non-Users n=30		Non-Participants n=36		p=
Mean Age	78.03		76.53		t[df]=1.30[64], NS
SD	4.94		4.40		
Range	70 - 87		70 - 87		
Gender	%	n	%	n	
Female	56.7	17	66.7	24	X^2[df]=0.69[1], NS
Male	43.3	13	33.3	12	
Locale %	n	%	n		
St.Albert	60.0	18	69.5	25	X^2[df]= 2.69[3], NS
Westlock	20.0	6	19.4	7	
Morinville	20.0	6	8.3	3	
Barrhead	0.0	0	0.0	0	
Redwater	0.0	0	2.8	1	NS = not significant

The reasons for not participating varied significantly between groups at least for the two main reasons given (Table 3). Fifty-three percent of non-users cited 'not interested or too busy', whereas only 14% of users gave this refusal. Fifty percent of users reported 'ill health' or 'in hospital' as the most frequent reason for refusal, while only 8% of non-users refused on the basis of 'ill health' (none were in hospital). As admissions to home care are dependent on a medical or health related need, the higher numbers of user non-participants reporting ill health than non-users was expected.

TABLE 3
REASONS NOT TO PARTICIPATE

	Users n=30		Non-Users n=30		
	%	n	%	n	
Not Interested	14.3	4	52.8	19	X^2[df]= 26.8[7], p=.000
Ill Health	50.0	14	8.3	3	
Unable to Contact	7.1	2	13.9	5	
Moved/Moving	7.1	2	8.3	3	
Language Barrier	10.7	3	2.8	1	
Deceased	10.7	3	0.0	0	
Vacation	0.0	0	8.3	3	
Family Ill	0.0	0	5.6	2	

Participant Scores on Cognitive Screening

Using the SPMSQ, no participants were excluded from the study based on the cut-off score of 6 or lower. Several potential users were not sampled (i.e. they were not mailed a letter) based on a diagnosis of dementia on the home care information system record. One user with a score of 5 was included in the study because the interviewer and the home care coordinator did not otherwise perceive a cognitive impairment. This individual had had a previous stroke with resulting word finding difficulties. He was able to identify the prime ministers by describing their characteristics, (e.g., ethnic origins and manner of speaking) although he could not name them. One non-user did not complete the screen as he was not available for the in-home portion of the interview. Therefore, most of his questionnaire was conducted over the phone and by mail. Thus, the results of cognitive screening analysis are based solely on the remaining 58 subjects with complete cognitive screen scores.

The mean score on the SPMSQ for the user group was 8.48 with a standard deviation of 0.91. The non-user group mean was 9.41, with a standard deviation of 0.68. Although this

resulted in a significant between-group difference (t[df]=-4.40[56], p=.000) the SPMSQ was utilized only as a screen to eliminate those subjects with cognitive impairments that could bias the results or hamper the interview process.

Demographic Characteristics of the Study Groups

The demographic characteristics of the two groups, users and non-users, are summarized in Tables 4 and 5. No significant differences were found between the groups on age, years married, education, gender, marital status, living arrangements and household size, although the user sample had more females (22 versus 17), more non-married individuals (18 versus 12), and more individuals living alone (15 versus 9) than the non-user group. These greater proportions may have proved significant with a larger sample, and thus would need to be controlled or accounted for.

TABLE 4
DEMOGRAPHIC CHARACTERISTICS: CONTINOUS VARIABLES BY YEARS

	Users n=30			Non-Users n=30				
	Mean	SD	Range	Mean	SD	Range	t[df]=	p=
Age	78.43	5.60	71-89	78.03	4.94	70-87	0.29[58]	NS
Married	53.50	9.03	35-67	47.61	12.93	1-60	1.37[58]	NS
Education	9.93	2.80	6-17	10.73	3.35	3-18	-1.00[58]	NS

NS = not significant

TABLE 5
DEMOGRAPHIC CHARACTERISTICS: CATEGORICAL

	Users n=30 %	n	Non-Users n=30 %	n	X^2[df]=	p=
Gender						
Female	73.3	22	56.7	17	1.83[1]	NS
Male	26.7	8	43.3	13		
Marital Status						
Married	40.0	12	60.0	18	2.40[1]	NS
Single	6.7	2	3.3	1		
Widowed	50.0	15	36.7	11		
Divorced/Separated	3.3	1	0.0	0		
Living Arrangements						
Living Alone	50.0	15	30.0	9	2.50[1]	NS
Spouse Only	20.0	6	53.3	16		
Spouse & Others	13.2	4	3.3	1		
Others Only	16.7	5	13.3	4		
Household Size						
One	50.0	15	30.0	9	4.93[3]	NS
Two	33.3	10	60.0	18		
Three	13.3	4	10.0	3		
Four	3.3	1	0.0	0	NS = not significant	

Income

Income (Table 6) was the only demographic variable which demonstrated a significant difference between the user and non-user groups. The median annual income category for users was 2 ($11,001 to $15,456), and for non-users was 3 ($15,457 to $30,913). This denotes an increase of almost two to three times the annual income from users to non-users. Income reported by users ranged from under $11,000 to under $41,208 per year, while non-users ranged from under $11,000 to over $77,244 per year.

TABLE 6
INCOME

		Users n=30		Non-Users n=30			
		%	n	%	n	X^2[df]=	p=
Rank	Annual Maximum						
1	$11,000	13.3	4	10.0	3	4.93[3]	NS
2	$15,456	46.7	14	20.0	6		
3	$30,912	33.3	10	36.7	11		
4	$36,066	0.0	0	6.7	2		
5	$41,208	6.7	2	6.7	2		
6+	Over $41,208	0.0	0	20.0	6		
Mean		2.40		4.07			
SD		0.97		3.03			
Median		2		3			

NS = not significant

Residential Variables

Summaries for residential variables are displayed in Tables 7 and and 8. No significant differences were found between the users and non-users for any of the residential variables. The majority of both the user and non-user groups were home owners (66.7% and 80% respectively), lived in single family homes (73.3% and 80%) and in bungalows (86.7% and 76.7%), and resided in small urban centres including towns (66.7% and 80%).

TABLE 7
RESIDENTIAL VARIABLES: CONTINUOUS

	Users n=30	Non-Users n=30	t[df]=	p=
Age of Home	24.40	26.03	-.37[58]	NS
SD	17.06	17.57		
Range	1 - 80	1 - 68		
Tenure in Home	15.43	20.87	-1.31[58]	NS
SD	13.82	18.14		
Range	0 - 55	1 - 56		
Tenure in Community	39.07	35.03	.51[58]	NS
SD	33.60	26.78		
Range	1 - 89	1 - 76	NS = not significant	

TABLE 8
RESIDENCE VARIABLES: CATEGORICAL

	Users n=30		Non-Users n=30			
	%	n	%	n	X^2[df]=	p=
Residence Status						
Owner	66.7	20	80.O	24	1.36[1]	NS
Renter	33.3	10	20.O	6		
Dwelling Type						
Single Family	73.3	22	80.0	24	0.37[1]	NS
Apartment	23.3	7	16.7	5	Categorized	
Duplex/Multiple	3.3	1	3.3	1	single family or other	
Dwelling Style						
Bungalow	86.7	26	76.7	23	1.00[1]	NS
Two Storey	13.3	4	10.0	3	Categorized	
Split Level	0.0	0	13.3	4	bungalow or other	
Urban/Rural Status						
Small City	26.7	8	56.7	17	1.36[1]	NS
Town	40.0	12	23.3	7	Categorized	
Rural Farm	20.0	6	16.7	5	urban or rural	
Rural Non-farm	13.3	4	3.3	1	NS = not significant	

Housing Questions

Subjects were asked four additional open-ended questions regarding the use of their home environments and any changes made for ease of living. Details of this information are found in Tables 9 to 12. Individuals could report more than one response for each question, thus items are not mutually exclusive and percent is not cumulative. Fewer users than non-users reported that all areas of their homes were supportive (see Table 9). The majority (60%) of users found their living/family rooms most supportive, followed by the kitchen, bedroom and bathroom. More non-users than users rated their kitchens as most supportive. One-third of non-users rated their living/family rooms as most supportive, but none rated bedrooms or bathrooms as most supportive.

TABLE 9
HOUSING QUESTIONS: Most Supportive Areas

Reported Areas	Users n=30		Non-Users n=30		Categorized: reporting or not	
	%	n	%	n	X^2[df]=	p=
All	20.0	6	30.0	9		NS
Living/ Family Room	60.0	18	33.3	10	4.29[1]	.04
Kitchen	33.3	10	46.7	14		NS
Bedroom	16.7	5	0.0	0	5.45[1]*	.05
Bathroom	6.7	2	0.0	0		NS
Hobby	0.0	0	13.3	4		NS
TOTAL (less 'All')		35		28		

NS = not significant * Fisher's Exact Test

The least supportive areas for both groups were the basement and the bathroom (Table 10). Thirteen percent of users and zero percent of non-users rated their kitchens as non-supportive. Concerns listed in the other category, included a bedroom that was too large and lack of a bathroom on the main level. More users reported specific areas as being non-

supportive, meaning that more areas of their homes were difficult to use for daily activities.

TABLE 10
HOUSING QUESTIONS: Least Supportive Areas

Reported Areas	Users n=30		Non-Users n=30		Categorized: reporting or not
	%	n	%	n	p=
None	63.3	19	76.7	23	NS
Basement	20.0	6	16.7	5	NS
Bathroom	10.0	3	3.3	1	NS
Kitchen	13.3	4	0.0	0	NS
Laundry	3.3	1	3.3	1	NS
Other	0.0	0	10.0	3	NS
TOTAL (less 'None')		14		10	

NS = not significant

Both groups rated unused areas in their homes similarly (Table 11). The majority reported no unused areas, followed by the basement, spare rooms and the upstairs. One non-user reported the living room as being unused. Users reported only slightly more areas unused in their homes than non-users.

TABLE 11
HOUSING QUESTIONS: Unused Areas

Reported Areas	Users n=30		Non-Users n=30		Categorized: reporting or not
	%	n	%	n	p=
None	63.3	19	66.7	20	NS
Basement	13.3	4	13.3	4	NS
Spare Rooms	16.7	5	10.0	3	NS
Upstairs	10.0	3	6.7	2	NS
Laundry	0.0	0	3.3	1	NS
Other	0.0	0	3.3	1	NS
TOTAL (less 'None')		12		11	

NS = not significant

Although changes to the bathroom were reported more frequently by users (50% more) than non-users, it was not significant (X^2[df]=2.40[1], p=.121) (see Table 12). Significance would likely occur with larger samples given these proportions. This coincides with the increased use of bathroom aids reported for users, and also their more frequent reporting of the bathroom being most supportive, i.e. modifications assisted with functioning, and least supportive, i.e. where greatest functional difficulties occurred. Non-users reported more general maintenance and renovations than users. Five individuals from each group reported moving to a new home or apartment for the purpose of ease of living. The majority of these moves were to single level homes or apartments with fewer or no stairs, with less space overall, and reduced responsibility for maintenance or yard work.

TABLE 12
HOUSING QUESTIONS: Changes

Reported Areas	Users n=30		Non-Users n=30		Categorized: reporting or not
	%	n	%	n	p=
None	6.7	2	16.7	5	NS
Bathroom	60.0	18	40.0	12	NS
General Maint/ Renovations	50.0	15	63.3	19	NS
Moved	16.7	5	16.7	5	NS
Changed Windows	13.3	4	20.0	6	NS
Added Railings	16.7	5	10.0	3	NS
Security	13.3	4	13.3	4	NS
Laundry Moved	10.0	3	6.7	2	NS
TOTAL (less 'None')		54		51	

NS = not significant Maint = Maintenance

Other changes to housing included replacing windows to improve the insulation rating, and also to provide ease for opening and cleaning than older windows. More non-users than users reported changing windows. Additional railings along stairs and hallways,

and relocated laundry facilities were reported by slightly more users than non-users. The groups reported security changes equally. Security changes included the addition of bars in basement windows, new deadbolts or locks, and intercom systems. Overall, users made slightly more changes to their homes than non-users.

Support Services Used

Home Care Services

The type and number of home care services used by users are displayed in Table 13. On average, 2.03 home care services were used with the range being from one to four. A majority of users received nursing services, followed by homemaking, physical therapy, occupational therapy, personal care and social work.

TABLE 13
TYPE AND NUMBER OF HOME CARE SERVICES USED

	Users n=30	
	%	n
Nursing	86.7	26
Homemaking	40.0	12
Physical Therapy	33.3	10
Occupational Therapy	23.3	7
Personal Care	16.7	5
Social Work	3.3	1
Mean	2.03	
SD	0.93	
Range	1 - 4	

Other Support Services

The types and numbers of support services used are listed in Tables 14 and 15. Yard or maintenance services, and homemaking services were utilized by the greatest number of users (n=23), followed by transportation, delivery, personal care, day support and meals. Users reported using significantly more support services (home care supports excluded) than non-users. When these totals were combined with home care support services (homemaking and personal care only), the mean for users increased further. With transportation and delivery excluded, users still reported significantly higher numbers of supports used.

Similar ranks for type of service used occurred in the non-users, with yard or maintenance services and homemaking ranked first and second, followed by transportation and delivery. Non-users used no day support or meal services. Neither group reported any use of personal care, professional care, nor visitor services from non-home care sources.

TABLE 14
TYPE OF SUPPORT SERVICES USED

TYPE	Users n=30 Paid	Vol	HC	Total	%	Non-Users n=30 Paid	Vol	Total	%
Yard/Maint	14	9	0	23	76.7	14	3	17	56.7
Homemaking	6	5	12	23	76.7	7	2	9	30.0
Transportation	5	10	0	15	50.0	2	2	4	13.3
Delivery	1	11	0	12	40.0	0	1	1	3.3
Day Support	3	1	0	4	13.3	0	0	0	0.0
Meals	1	1	0	2	6.7	0	0	0	0.0
Personal Care	0	0	5	5	16.7	0	0	0	0.0
TOTAL				84				31	

Vol = Volunteer HC = Home Care Maint = Maintenance

TABLE 15
NUMBER OF SUPPORT SERVICES USED

	Users n=30	Non-Users n=30	t[df]=	p=
Support Services Used: HC excluded				
Mean (SD)	2.23 (1.17)	1.03 (0.96)	4.35[58]	.000
Range	1 - 6	0 - 4		
Support Services Used: HC included				
Mean (SD)	2.80 (1.17)	1.03 (0.96)	5.69[58]	.000
Range	1 - 7	0 - 4		
Total Used Less Transportation and Delivery				
Mean (SD)	1.90 (1.00)	0.90 (0.85)	4.20[58]	.000
Range	1 - 5	0 - 2		

HC = Home Care Homemaking and Personal Care Services

Aids Used

The number and type of aids or assistive devices are summarized in Table 16. Users reported twice as many aids as the non-user group ($t[df]= 3.4[58]$, $p<.01$), and also reported more types of aids used. Bathroom aids including bars, bath and toilet seats, bath lifts and commodes, were most frequently used by both groups. Mobility aids, such as walkers, canes, wheelchairs, ranked second for users, followed by environmental aids which included reachers, bed/chair blocks, dressing aids and jar openers. Non-users used more environmental aids over mobility aids.

TABLE 16
AIDS/ASSISTIVE DEVICES USED

Types of Aids Used	Users n=30	Non-Users n=30	
Bathroom	75	41	
Mobility	27	6	
Environmental*	19	12	
TOTAL	121	59	
Mean	4.03	1.97	t[df]=3.38[58], p=.001
SD	2.74	1.94	
Range	0 - 8	0 - 8	

* includes reachers, bed/chair blocks, raised cushions, one hospital bed, jar openers, dressing aids, adapted light switches and emergency response systems

Independent Variables

Physical Environment

No significant differences were found between users and nonusers on the means of the physical environment measure (see Table 17). Several questions from the physical environment measure were separated into nine subset scores of access, mobility, bedroom, bathroom, tub only, housecleaning, laundry, leisure and kitchen. No significant differences were found between user groups on any of the subset scores although the difference between mean bathroom scores was almost significant (t[df]=1.96[58], p=.055) with users reporting higher scores.

TABLE 17
PHYSICAL ENVIRONMENT MEANS

	Users n=30	Non-Users n=30	t[df]=	p=
Mean(SD)	526.50(16.74)	526.73(12.11)	0.06[58]	NS
Range	488 - 554	505 - 549		
Subset Means(SD)				
Access	114.57 (5.10)	114.80 (3.81)	0.20[58]	NS
Mobility	138.27 (5.63)	136.97 (4.14)	1.02[58]	NS
Bedroom	28.20 (1.61)	28.13 (2.08)	0.14[58]	NS
Bathroom	110.43 (6.78)	107.33 (5.43)	1.96[58]	NS
Tub Only	34.97 (2.95)	33.80 (2.80)	1.57[58]	NS
Houseclean	44.87 (2.13)	45.50 (1.98)	1.19[58]	NS
Laundry	43.43 (2.24)	44.33 (2.16)	1.59[58]	NS
Leisure	41.93 (2.20)	42.10 (2.43)	0.28[58]	NS
Kitchen	120.63 (3.94)	122.00 (4.23)	1.30[58]	NS

NS = not significant

Perceived Environment

The MAI and the seven additional questions were analyzed separately (see Table 18). No significant differences were found between groups on either of the perceived environment measures.

TABLE 18
PERCEIVED ENVIRONMENT MEAN

	Users n=30	Non-Users n=30	t[df]=	p=
MAI (SD)	31.55 (2.66)	31.77 (2.85)	-.30[58]	NS
Range	25 - 35	25 - 35		
7 Questions (SD)	40.87 (5.02)	41.90 (4.17)	-.87[58]	NS
Range	27 - 49	32 - 49		

NS = not significant

Social Environment

The mean scores on the PRQ85, used to measure social environment (see Table 19), did demonstrate a significant difference with users scoring lower than non-users.

TABLE 19
SOCIAL ENVIRONMENT MEAN

	Users n=30	Non-Users n=30	t[df]=	p=
Mean (SD)	147.37 (15.55)	156.67 (15.09)	-2.35[58]	.022
Range	119 - 184	100 - 187		

Functional Ability

Users also scored lower on the functional ability measure (see Table 20), as anticipated. The differences between groups on the total and subset means were all significant except for washing (t[df]=-1.59[58], p=.118).

The greatest difference was observed on house cleaning tasks, followed by using the phone and leisure tasks, hygiene (including bathing) and cooking. Individual items reported as not difficult by either group included opening, closing, locking or unlocking doors, operating light switches, adjusting heat, using the balcony or porch, washing hands and face, brushing teeth or dentures, flushing the toilet, using toilet paper, using the fridge, cupboards or kitchen drawers, using the telephone, using radio or television, and taking medication.

TABLE 20
FUNCTIONAL ABILITY MEANS

	Users n=30	Non-Users n=30	t[df]=	p=
Mean (SD)	126.66(10.39)	135.53 (3.47)	-4.43[58]	.000
Range	94 - 138	125 - 138		
Subset Means (SD)				
Access&Mobility	15.10 (1.06)	15.73 (0.52)	-2.93[58]	.005
Dressing	9.20 (1.42)	9.87 (0.43)	-2.45[58]	.017
Hygiene (total)	37.57 (3.09)	39.53 (0.78)	-3.38[58]	.001
Washing	13.67 (0.84)	13.93 (0.37)	-1.59[58]	NS
Shower	7.47 (0.82)	7.93 (0.37)	-2.85[58]	.006
Bathing	10.70 (1.49)	11.67 (0.66)	-3.25[58]	.002
Toileting	5.73 (0.45)	6.00 (0.00)	-3.25[58]	NS
Cooking	30.17 (2.82)	31.83 (0.75)	-3.13[58]	.003
Laundry	14.80 (1.63)	15.77 (0.77)	-2.94[58]	.005
Housecleaning	8.04 (1.91)	10.90 (1.61)	-5.50[58]	.000
Phone & Leisure	9.43 (0.73)	9.97 (0.18)	-3.89[58]	.000
Medications	2.00 (0.00)	2.00 (0.00)		NS
Mobility	40.57 (5.45)	45.10 (1.52)	-4.39[58]	.000

NS = not significant

Perceived Health Status

Finally as expected, the mean perceived health status scores (see Table 21) were also significantly lower for users than non-users. The median user score was fair and varied from poor to excellent, while the median non-user score was good, ranging from fair to excellent.

TABLE 21
PERCEIVED HEALTH STATUS

	Users n=30	Non-Users n=30	t[df]=	p=
Mean(SD)	3.20 (0.81)	3.87 (0.63)	-3.57[58]	.001
Range	1 - 5	3 - 5		
Median	3 / fair	4 / good		

Predictors of Home Care Use

Univariate Analysis

Multiple correlations with the dependent, independent and demographic variables were computed to determine the interrelationships among variables (see Table 22). Income demonstrated a significant difference between users and non-users, thus was the only demographic variable included for this analysis.

TABLE 22
ASSOCIATIONS WITH HOME CARE USE: Spearman's Correlation Coefficients

	User Status	PhE	PerE	SocE	FA	Health
PhE	.0039					
PerE	.1311	.0372				
SocE	.3197*	-.0399	.4491**			
FA	.5802**	-.1374	.2885*	.3387**		
Health	.4294**	-.2321	.1456	.2756*	.3442**	
Income	.3394**	.2257	-.1267	-.0169	.3480**	.2031

**=p<.01
*=p<.05

User Status: Home Care = 0; PhE=Physical Environment;
PerE=Perceived Environment; SocE=Social Environment; FA= Functional Ability

The strongest correlations with home care use were functional ability and health, followed by income and social environment. Health and functional status were also strongly positively correlated, but this relationship was not as strong as the association of either variable with home care use. Functional status also had a strong significant positive correlation with income, but the reasons for this are unclear. A strong positive correlation was also observed between social environment and the perceived environment. Both measure feelings and degrees of satisfaction, thus the strength of the correlation was not

unexpected.

No significant correlations occurred between any of the variables and the physical environment. Of the independent variables, the two stronger correlations were with health and functional ability, but both were negative indicating that as health or functional ability declined, the physical environment scores actually increased. One possible explanation might be that participants modified their environments to accommodate declining health and/or function.

Logistic Regression Analysis

To determine which of the variables influenced or predicted home care use, logistic regression analysis was computed with the independent and demographic variables that demonstrated a significant difference between user groups at the univariate level. Of the five independent variables, neither the physical environment nor the perceived environment obtained significance between groups, but significant differences were found for functional status, social environment and perceived health. Differences on the independent variables that did not attain significance at $p<.05$, were substituted by demographic or residential variables that did reach significance at $p<.05$. Income was the only demographic variable that attained a significant difference between the groups at $p<.05$. Thus, the four variables of functional status, social environment, perceived health status and income were entered into the logistic regression analysis.

Perceived health was categorized, with fair, poor and bad dummy coded as 1 ($n=32$), and good and excellent coded as -1 ($n=28$). Functional status, although ranging from 98 to 138 displayed a ceiling effect with fourteen individuals scoring the maximum. For this reason, it also was categorized with low scores up to 135 dummy coded 1 ($n=33$), and 136 through

138 coded -1 (n=27). Dummy coding the low scores as positive and users as 1 versus non-users as 0, direct the analysis to interpret an increased risk of home care use with low scores (Norusis, 1992). Categorizing income into smaller units did not provide any further improvements on the model, thus income as well as social environment were entered and analyzed as originally scored.

In the first analysis (Table 23), four variables were entered together, namely social environment, functional ability, perceived health, and income. All four contributed to an increased risk of home care use but only two were significant. Individuals with lower functional ability were 2.5 times more likely to be admitted to home care, and those with lower perceived health scores were just over twice as likely to be home care users. This model was significant (X^2[df]=30.11[4], p<.001). Neither income nor social environment reached significance, although the risk values indicated that low scoring participants had a slightly increased risk for home care use.

TABLE 23
LOGISTIC REGRESSION ANALYSIS: ALL

	B	p=	R	Exp(B)
Function - low	.8726	.0172	.2101	2.3931
Health - poor	.7983	.0227	.1959	2.2218
Soc Envir - low	.0475	.0900	.1025	1.0487
Income - low	.4466	.1059	.0859	1.5629
Constant	-8.4535	.0668		

Model Chi-Square [df] = 30.106 [4], p=.000

Where 1 = Home Care; 0 = Non-Home Care; Health=Perceived Health;
Soc Envir= Social Environment; B=coefficient; Exp(B)=real odds

In the second logistic regression analysis, all four variables were entered via conditional forward stepwise command (Table 24). Variables not significant at p<.05 are

excluded in the Stepwize analysis (Norusis, 1992). Using the Stepwize command, the SPSS program chooses the variable with the smallest significance level to enter first. By applying various tests, SPSS determines which other variables to enter by estimating the model with each variable removed and assessing the change in the original model (Norusis, 1992). In this way SPSS chooses the best model to reject the null hypothesis. This is similar to least squares regression where variables with strong associations with the dependent variable are entered first, followed by variables that strongly correlate with the residual of the dependent with the first variable(s) partialled out (personal communication with T.O. Maguire, 22 October 1992). In this way variables highly correlated with the dependent, but also with each other, may be dropped from the final model as they do not explain any additional component of the dependent variable.

TABLE 24
LOGISTIC REGRESSION ANALYSIS: STEPWISE ENTRY

	B	p=	R	Exp(B)
Function - low	1.1539	.0006	.3420	3.1706
Health - poor	.8979	.0072	.2505	2.4544
Constant	.0727	.8236		

Model Chi-Square [df] = 24.054 [2], p=.000

Where 1 = Home Care; 0 = Non-Home Care; Health=Perceived Health;
B=coefficient; Exp(B)=real odds

The variables income and social environment were both removed from the model following the stepwise analysis because they failed to reach significance at p>.05 (Table 23). Also, strong intercorrelations of functional status with income and health with social environment, and the weaker associations of income and social environment with home care status would add little new information to the equation.

By deleting income and social environment, the risks associated with lower scores on function and health increased, as the portions associated with and accounted for in income and social environment were removed. Persons with lower functional ability scores were 3.2 times more likely to be users than non-users, and persons with lower perceived health scores were 2.5 times more likely to be users than non-users. This model was also significant ($X^2[df]=24.05[2]$, $p<.001$).

Associations Between Residential and Environmental Variables

Correlations among the physical environment, perceived environment, and residential variables were conducted to understand the potential relationships and interrelations of person-environment fit (Table 25). The strongest and only significant associations of the residential variables and physical environment were with the age of the home, the length of time the individual had resided in the home and in the community and with dwelling type. All the correlations were negative, indicating as the age of home or length of tenure increased, the physical environment scores declined, and for dwelling type, apartments had higher physical environment scores than single family homes. The strength of the relationship between age of home and physical environment ($r=.48$), suggested that this particular physical environment measure may closely match modern housing features or recent building codes.

Only one correlation reached significance with the perceived environment, that of owner/renter status, indicating that owners had higher scores on the MAI.

TABLE 24
RESIDENTIAL AND ENVIRONMENTAL ASSOCIATIONS: Spearman's Correlation Coefficients

	PhE	PerE	Age	RT	CT	O/R	B/O	H/A
PerE	.0372							
Age	-.4798**	-.1397						
RT	-.2864*	-.0698	.8444**					
CT	-.2551*	-.0321	.5692**	.6327**				
O/R	.1328	-.2744*	-.2233	-.3737**	-.3746**			
B/O	-.2451	.0790	.3846**	.2204	.1568	.0065		
H/A	.3335**	.0516	-.6138**	-.6402**	-.5396**	.2911*	-.1598	
R/U	-.1279	.0610	.3087*	.4447**	.5958**	-.1784	-.1595	-.3330**

**=p<.01
*=p<.05

PhE = Physical Environment; PerE = Perceived Environment; Age = Age of Home
RT = Residential Tenure; CT = Community Tenure;
O/R = Owner/Renter where Owner = 0; B/O = Bungalow/Other where Bungalow = 0;
H/A = House/Apartment where House = 0; R/U = Rural or Urban where Rural = 0.

CHAPTER VI

DISCUSSION

The primary finding of this research was that home care users **did not vary** from non-users on measures of the physical and perceived environment. Significant differences between users and non-users were found for the three intervening variables of social environment, functional ability and perceived health status, with users scoring lower than non-users on all three as expected from the literature review. Only two independent variables, functional ability and perceived health status, retained their significance in a model predicting use of home care services.

Environmental and Residential Variables

An analysis of residential and environmental variables found no significant differences between users and non-users on any of the variables. The lack of significance on the physical environment measure with home care use does concur with the literature (Thorslund et al., 1991). To examine the results further, correlations were completed with the physical and perceived environment scores and the residential variables. Strong negative correlations were found between physical environment and age of home, and apartments rather than single family dwellings, indicating that the physical environment measure embodied more modern housing features and newer building codes. This is further corroborated by a number of test items reflecting modern housing features such as refrigerator with side by side doors, built-in ovens, single action and lever faucets, and roll-out drawers. The only significant relationship with the perceived environment was a

negative correlation with owner/renter status, indicating that home owners had higher perceived environment scores, possibly due to greater attachment and control over the home than renters.

All the housing in this study met basic standards, i.e. hot and cold running water, indoor toilet and bath facilities, central heating, electricity, gas or electric stove and a refrigerator were all present (Keating, 1991). All housing had adequate lighting and storage facilities. This apparent lack of variability in the physical environment scores points to a similarity across housing for these groups, and another study with greater variance in the scores between groups might show significant differences on the physical measures. In a study to predict home care use by Solomon et al. (1988), housing type was excluded from analysis due to lack of variance. Unfortunately, no definition of housing type was reported. Clearly this sample of housing was not similar to that reported in the literature, of poorer housing conditions for the elderly in general (Lawton, 1986).

Although the difference between groups was not significant, the magnitude of the perceived environment scores further confirms the desire of most elderly persons to remain at home, despite changes in health and functional abilities. In fact all but 5 users and 3 non-users reported satisfaction with their homes and neighbourhoods above the 80th percentile.

Person-Environment Fit

Relationships between personal factors and environmental factors are the basis for theories of person-environment fit. The correlational analysis in this study provides only rough, preliminary data to examine person-environment fit and should not be considered definitive nor comprehensive. A weak negative association was found between the

measures of the physical environment and functional ability indicating that persons with declining functioning live in more adaptive housing. This concurs with the literature that identified a tendency for frail elders to live in homes with more accommodating features (Reschovsky & Newman, 1990; Struyk & Katsura, 1988).

Other potential causes for the lack of association could be with the measures used. Although the physical environment measure was extensive, it may not have been sensitive to the specific environmental variables that influence individual functional or health needs that necessitate home care services. A stronger association may have occurred with a greater range of scoring choices on the functional ability measure. The 'all or none' scoring eliminates those individuals who independently perform a task albeit with difficulty, using an aid or an environmental modification, without which they would be dependent on human assistance.

Several individuals in this study had modified the physical environment to suit their needs, including 13 users and 7 non-users who had relocated laundry facilities to a more usable space (also see Table 12). This indicates that a good portion of elderly persons recognize the influence of the environment on functioning and were willing to make changes to assist in retaining independence. For users, it could be that home modifications assisted but were not able to compensate for the decline in functional ability.

A moderate positive association was observed between perceived environment scores and functional ability. Perhaps there is something about a person's home, not quantifiable in physical housing features, but understood by the individual alone, that does provide a person-environment fit. Like perceived health ratings, the individual may be able to synthesize a variety of personal, social, environmental or other information and

create a uniquely accurate fit.

Contrary to the literature, subjective or perceived environment scores did not correlate significantly with health. The strongest correlation with perceived environment was with social environment indicating, and implied in the literature, that home has a strong bond with one's neighbourhood and is meaningful in the sociocultural context as well.

Person-environment fit is complex and requires further research to understand its components and interrelationships. Limitations in both the physical environment and the functional ability measures in this study have been discussed and these variables should be investigated further. Alternative methods to study person-environment fit should be considered such as examining environments already adapted for individuals with specific functional deficits and determining the factors and relationships that create a fit. Further qualitative analysis may also illuminate the intricacies of the perceived environment and its influence on person-environment fit.

Generalizability

Overall, users were considered to be similar to those described in the literature and data from Alberta Health on home care clients. Non-users were also similar to Alberta's and Canada's elderly populations, except on income which was substantially higher than the general population.

In 1991, Canada's seniors over 65 years old, were 58% females, and 57% married, 33% widowed, and 4% divorced, separated or single (Norland, 1994). These percentages are similar to the non-user group in this sample, but the user group had more females and fewer married persons than Canada's seniors, which is congruent with other home care

samples (Beland, 1986; Branch et al., 1988; Chappell, 1985). Of Alberta's CHCP long term clients 70 years and older, approximately 89% were over 74 years (Alberta Health, 1994), while in this sample 66.7% were over 74 years.

According to the 1991 census, almost 60% of seniors had incomes below $15,000, as did the users, while only 30% of non-users were in this income bracket (Norland, 1994). Also, 17% of non-users had incomes over $50,000, compared to none of the users, and only 5% of Canada's seniors (Norland, 1994). Thus the significant difference between users and non-users on income does not concur with the general population and requires explanation. In this sample, differences in income could be attributed to the higher proportion of males and married couples in the non-user group as significant differences also existed for income by gender and those married or not married.

The majority of Canada's seniors lived in single family homes (57%), and owned their homes (63%) (Norland, 1994), as did this study's total sample (see Table 8) although at higher proportions. Other home care samples (Beland, 1986; Chappell, 1985) varied greatly from the general population and this study, but appeared to be largely urban based where higher proportions of apartment dwellers and renters would exist.

No data on usage of support services for the Canadian population was available. Support usage did vary with 36% receiving personal care and 31% receiving home making for Alberta home care clients, 29% and 20% respectively for the SHU home care clients (Alberta Health, 1994), compared to 17% and 40% respectively for this home care sample. The use of home care services (by frequency) though was found to be very similar among the province, the SHU, reports by Solomon et al. (1993) and Kempen and Suurmeijer (1991) and this sample (see Table 13), with two exceptions. The rankings for occupational therapy and physical therapy were reversed in this sample but the numbers

were small for both services, and Kempen and Suurmeijer reported no physical therapy. (Solomon et al., and Kempen and Suurmeijer combined homemaking and personal care into one category of home support.)

While 74% of Canada's seniors rated their health good to excellent (Health and Welfare Canada, 1985), only 64% of senior Albertans gave the same ratings (Senior's Advisory Council for Alberta, 1992b). Ratings by non-users coincide with Canadian ratings with 73% reporting good to excellent health, while only 33% of users gave similar ratings. As individuals admitted to the CHCP must have a health need, lower rates of health than the general population would be expected and have also been reported elsewhere (Beland, 1986; Branch et al., 1988; Chappell, 1985).

The proportion of Canadian seniors reporting some degree of disability is 46%, but this rises with increased age to 84% for those over age 85 (Norland, 1994). Using functional ability scores of below 136 as a rating of disability, 78% of users and 30% of non-users reported disability. Of Albertans aged 75 and over, 49% required help with yard work, 38% with housecleaning, 31% with groceries, 24% with meals and 10% with personal care (Senior's Advisory Council for Alberta, 1992b). Similar ranks occurred in this study in both groups, although the percentages varied and help with groceries was not a separate task (see Table 14). The high proportion of home care clients reporting functional limitations is also consistent with the literature (Beland, 1986; Branch et al., 1988; Chappell, 1985; Fredman et al., 1992).

In summary, the sample of home care users in this study closely resembles other home care samples from the literature and from Alberta's Home Care data having higher proportions of individuals that were female, unmarried, had functional limitations and reported poor self-rated health (Beland, 1986; Branch et al., 1988; Chappell, 1985). Those

living alone (Beland), and with lower incomes and cognitive impairments (Branch et al.) have also been cited as more likely to be home care clients, but not consistently across studies. This sample of non-home care users closely resembles reports of Canada's and Alberta's population of elderly persons, except on income which was higher for this sample.

Limitations

A retrospective design is limited in that it cannot account for all the factors that may lead to the outcome of the dependent measure (Norman & Streiner, 1986). Several potential intervening variables were identified and measured so that their influence on other variables and on home care use could be described and accounted for. The investigator knew which subjects were users and nonusers, but potential bias here was reduced by the objective nature of the measures.

The user and non-user groups in this study had many similarities to known populations including the Alberta Home Care Program client data, Alberta's and Canada's senior populations, but was not a perfect fit to permit wide generalizations.

As Alberta's home care programs operate within broad regulations with few mandatory services (e.g. rehabilitation is not required in home care programs), differences in operations and priorities for service use occurs throughout the province. It is possible that SHU home care clients vary from other programs because of different priorities for services. This could explain why the SHU percentage of home support and personal care use varied from the province as a whole.

This study did not examine the issue of affordability of housing in relation to income nor to the costs associated with environmental change such as moving to more

supportive environments, renovating or completing home modifications. It is recognized that affordability of choices is likely a crucial factor in determining many alternatives of environmental change.

Recommendations

Methodology

The physical environment tool used in this study requires further investigation to confirm its validity, or possibly modifications if it is to be used as a research tool to measure the physical environment. It would appear to remain a very useful clinical tool in determining problem areas either in functioning or in the environment and offers a variety of appropriate options to remedy any problems.

To accurately quantify functional ability and understand its relationship to the environment, it is imperative to use a scale with three or four answer choices, e.g., independent, independent with aids, can perform task but is difficult, cannot perform task. The choice of only 'all or none' responses limited the ability to assess any relationship between functional ability and the environment because those individuals who remained independent in a task, although with difficulty, could not be separated from those who were dependent or unable to perform the task.

Future Research

Where incongruence between the person and the environment occurs, several choices exist: move, modify the physical environment, introduce technical aids, add human supports, teach new skills or refocus negative attitudes. Further investigation using experimental designs are required to examine the impact of each of these on person-

environment fit. The influence of choice and affordability in relation to moving, home modifications, technical aids or human supports also requires investigation.

Future research also needs to look more closely at individual differences, as special housing or environmental modifications may not equally benefit all elderly persons (Carp, 1987). Person-environment fit may apply differently to those with specialized functional or behavioral needs, than those without. Thus, further investigation on a threshold limit between life maintenance needs and life satisfaction as outlined by Carp and Carp (1984) should be considered.

Individuals with cognitive or behavioral limitations may have different environmental needs that were not examined here as the physical environment measure used was developed for persons with physical and functional deficits. Cognitive impairment has been identified as a risk factor for home care use (Branch et al., 1988; Solomon et al., 1993), but has not been studied in relation to environmental influences. Thus further study on the influence of environment on cognitive and behavioral limitations is required.

Housing, Technology and Support Options

A variety of options for seniors to age in place should be available, including housing choices, modifications, technical aids and human supports. Optimal person-environment fit for the elderly may require enhancement of existing environments and neighbourhoods, with structural, human and community supports, including transportation, shopping and home maintenance services. This requires involvement of individuals, communities and various levels and departments of government to ensure that a complex but appropriate mix of housing, health and support options are available (Alberta Health,

1992).

To assist elderly persons to maintain independent functioning, prevent institutionalization and reduce the amount of personal support, the literature has suggested use of a wider variety of assistive technology (Parker & Thorslund, 1990), including high technology such as voice activated and interactive computers with environmental interfaces. Lawton (1986) proposes that simple and low-tech adaptations may prove most useful to elderly persons with minimal or no disabilities. The high numbers of aids and assistive devices used by this study's participants suggests several additional questions: what aids are beneficial and for what purpose, what aids replace human supports and in what situations, and what are the cost-benefit ratios. None of the aids used in this study could be classed as high technology, therefore this study concurs with others that further exploration in both low and high tech design of housing adaptations and assistive devices should be considered (Parker & Thorslund).

The number and variety of supports used by both groups in this study supports the concept that a variety of home support options enable elderly individuals to remain at home (Shapiro & Tate, 1988). The lack of influence of the environment on home care use or functioning suggests that the environment may not be as important as human supports in assisting elders to remain at home. But residential change, housing modifications, and technological devices may not have been as fully explored, supported nor funded, to assist with aging in place as human supports have to date.

Conclusion

As the elderly population continues to outgrow other population sectors, knowledge of all individual and environmental factors that influence aging in place is crucial for optimizing personal independence, maintaining healthy communities and minimising public expenditures. Older persons want to remain at home where greater personal well-being is attained (Chappell, 1990b), but the numerous factors influencing independent community living or home care use are not clear. To date, various studies have demonstrated that social and home care supports are frequent and important options assisting elders to remain at home.

This study found functional ability and perceived health were risk factors for home care use, but the physical and perceived environment had no direct influence on home care use. High perceived environment scores indicate a strong affinity and satisfaction with home. While this study found no significant influence of the environment on home care use, a majority of elderly in this sample recognized and made home modifications to assist them in everyday living. Home care users also used a significantly greater number of assistive devices, and both formal and informal supports to remain as independent as possible at home. Thus the home environment appears to be significant not only in the hearts and minds of the elderly, but in their ability to make choices, be independent, and age in place.

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APPENDICES

APPENDIX A - LETTERS OF PERMISSION

SUNCOAST GERONTOLOGY CENTER

UNIVERSITY OF SOUTH FLORIDA
HEALTH SCIENCES CENTER

June 8, 1994

Lorna J. Reimer, BScOT, OT(C)
9 Lucien Drive
St. Albert, Alberta
CANADA T8N 4M3

Dear Ms. Reimer:

I am writing to hereby grant you permission to use the Pfeiffer Short Portable Mental Status Questionnaire (SPMSQ) for use in completing your study "Environmental Influences on Home Care Use." A report of the journal article documenting the development of the SPMSQ is enclosed for your information. Also enclosed is a flier describing the availability of user pads of the SPMSQ, with a sample page of the pad.

I would greatly appreciate it if you would please share with us the results of any study or studies utilizing the Pfeiffer SPMSQ. I would also appreciate it if you would accurately cite the enclosed publication as the source of the SPMSQ.

Thank you,

Eric Pfeiffer M.D.

Eric Pfeiffer, M.D.
Director

EP/kam

Enclosures

MAILING ADDRESS: 12901 Bruce B. Downs Boulevard, MDC Box 50, Tampa, Florida 33612-4799
STREET ADDRESS: 10770 North 46th Street, Suite A-1200, Tampa, Florida 33617
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*(deceased)

April 30, 1993

Lorna J. Reimer, BScOT, OT(C)
9 Lucien Drive
St. Albert
Alberta T8N 4M3
Canada

Dear Dr. Reimer,

I regret that we must charge for the xeroxing of the MAI material, as in the enclosed notice.

I am very glad to have you use any part of the MAI as you wish. I've done no new psychometric analyses of the instrument. Should you wish only the environmental items as they appear in the MAI, a copy of these is enclosed.

Yours sincerely,

M. Powell Lawton, Ph.D.
Senior Research Scientist

MPL/ba
encl.

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Sherrick Hall
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May 6, 1993

Lorna Reimer
9 Lucien Dr.
St. Albert, Alberta
T8N 4M3

Dear Ms. Reimer:

Thank you for your request. I am pleased that you are interested in the PRQ85 for inclusion in your research project. If you find it meets your needs, you have my permission to use it and reproduce as many copies as you will require. In this packet you will find a copy of the PRQ85, the directions for scoring, the suggested demographic information, and some additional results from the continued psychometric evaluation of the PRQ. Much of our work is published, but if you have specific questions please do contact me. Our latest article entitled "Social support: Assessment of validity", is in the July/August 1990 issue of Nursing Research.

As we continue to work with the refinement and development of the PRQ we are likewise beginning to collect and to collate data sets provided by researchers who have used the PRQ. One specific aim is to have a systematized data base that would provide a source of comparison across studies, populations, situations etc. If you are willing to share your data set we would be most happy to include it in this growing data base. I have included the list of demographic variables that should be sent with the data.

The PRQ has been designed with two distinct parts. Part 1 can address some aspects of the network structure and provides descriptive data regarding situational support. Part 2 is a scale developed to measure the level of perceived social support based on the work of Robert Weiss. While Part 1 can be used without Part 2 or Part 2 without Part 1 we ask that no items or questions be changed/deleted, or the item sequence altered in any way. If you feel you need to change specific items to meet the aims of your research, I would ask that you submit them to me for review. I would be happy to discuss any questions or concerns you have in relation to your specific research.

If you decide to use the PRQ85 in your research please send us a letter with a brief description of your study. Students are to include the name of their research advisor. The tool must be identified, in your questionnaire, as the Personal Resource Questionnaire and authorship of the tool acknowledged in any publication or communication regarding the tool. Please send three dollars to help with the expenses of this mailing. Thank you for your interest in the PRQ. I wish you well in your research.

Sincerely,

Clarann Weinert

Clarann Weinert, S.C., Ph.D.,R.N.
Associate Professor

APPENDIX B - SAMPLE SIZE CALCULATION

For calculating multiple risk factors:

Total $n = L/f^2 + k = 1, \alpha = .05, \beta = .20.$

Power test for H_O: $R^2 < 0.2$ (the variance declared significant)

H_A: $R^2 \geq 0.2$

$F^2 = R^2/1\text{-}R^2$:

$F^2 = .2/.8 = .25.$

k = number of independent variables = 5.

With an alpha level (α) of .05, and a study power of .80, given 5 variables, L = 12.83:

$n = 12.83/.25 + 5 + 1$

$= 51.32 + 6$

$= 57.32.$

In order to find a 0.2 variance at an alpha level of .05 and a study power of .80, a minimum of 58 subjects must be sampled. This study will sample a total of 60 subjects.

APPENDIX C - LETTERS OF SUPPORT

HEALTH UNIT STURGEON
Box 174, 23 Sir Winston Churchill Avenue, St. Albert, Alberta T8N 1N3 Telephone: 459-6671 Fax: 460-2829

16 March, 1994

Lorna J. Reimer, BScOT
Masters of Science Student
Department of Occupational Therapy
Faculty of Rehabilitation Medicine
University of Alberta

Dear Lorna:

Re: Thesis Proposal
Environmental Influences on Home Care Use

Further to review of the above research proposal and discussion of methodology with you, I deem the research to be methodologically and ethically sound, and of benefit to Sturgeon Health Unit and the citizens of the health unit region.

Sturgeon Health Unit supports the research in principle and supports you in carrying out the work using the facilities of the Sturgeon Health Unit.

Sincerely,

Alan Murdock, MD, CM, PhD, FRCP(C)
Medical Officer of Health

AM/pd

F:\users\pat\corr\letters\lorna

HEALTH UNIT STURGEON
Box 174, 23 Sir Winston Churchill Avenue, St. Albert, Alberta T8N 1N3 Telephone: 459-6671 Fax: 460-2829

23 February 1994

Lorna J. Reimer, BScOT
Masters of Science Student
Department of Occupational Therapy
Faculty of Rehabilitation Medicine
University of Alberta

Dear Lorna:

Re: Thesis Proposal
Environmental Influences on Home Care Use

Your proposal to study Environmental Influences on Home Care Use has been reviewed by the Home Care Program of Sturgeon Health Unit. The research is relevant to the objectives of the Home Care Program.

The Home Care population to be sampled is specified and accessible, and the rights of subjects protected.

The Home Care Program of Sturgeon Health Unit supports the research in principle and supports you in carrying out the work using the facilities of the health unit's Home Care Program.

Sincerely,

Carol E. Sims.

Carol Sims, R.N., BScN.
Director, Home Care

CS/pd

F:\users\pat\corr\letters\lorna

HEALTH UNIT
STURGEON
Box 174, 23 Sir Winston Churchill Avenue, St. Albert, Alberta T8N 1N3 Telephone: 459-6671 Fax: 460-2829

11 March 1994

Dr. Sharon Warren
University of Alberta
89 Avenue & 114 Street
Edmonton, Alberta

Dear Dr. Warren:

I have had the opportunity to review Lorna Reimer's thesis proposal entitled "Environmental Influences on Home Care Use".

I find the concepts which Lorna is investigating i.e. the relationship between environment and health to be both relevant and timely from a public health perspective and am very supportive of her initiative. This study has the potential of looking at very early intervention measures to facilitate seniors living independently in their own home environments.

As a community health agency we are in an ideal situation to provide access to a wide variety of population groups for comparative analysis and are most willing to assist in the research wherever possible. In order to facilitate the research, permission has been given for Lorna to access Flu Immunization Records for Seniors in the St. Albert and Morinville offices.

Sincerely,

Janet Thorpe

Janet Thorpe, R.N., B.Sc.N.
Director, Family Health Services

JT:ml

F:\ltr.ths\reimer

APPENDIX D - LETTER OF INTRODUCTION

Dear Participant:

I am an occupational therapist enrolled in a Master of Science Program at the University of Alberta. I also work with the Home Care Program at the Sturgeon Health Unit. Understanding how the home environment influences seniors' abilities to remain at home is of special interest to me.

I am asking you to participate in my study to find out how the environment affects the ability of older persons to stay at home. Health, independence in daily tasks, supports (family, friends and neighbours), and feelings about home will also be looked at.

If you agree to be in this study, I will visit you in your home for two hours. First I will interview you for about one hour. I will be asking questions about how easily you can do everyday tasks like getting dressed, opening doors, and turning on lights. I will also ask about your health, your support system, and your feelings of your home and neighbourhood. The rest of the time I will look at the physical features of your home such as the rooms, entrances, and stairs. I will also look at safety features, and any changes you have made to suit your special needs.

I will be phoning you in the next few days to ask if you want to be in the study. An interview date will be set up at that time if you are interested. Please ask me questions at any time. Thank you.

Sincerely,

Lorna J. Reimer
Occupational Therapist
459-6671

APPENDIX E - CONSENT

TITLE OF PROJECT: ENVIRONMENTAL INFLUENCES ON AGING IN PLACE

RESEARCHER DOING THIS STUDY IS:

LORNA REIMER
Masters of Science Student
Department of Occupational Therapy
Faculty of Rehabilitation Medicine
University of Alberta

Phone: 459-6671
or 458-1199

FACULTY ADVISOR IS:

DR. SHARON WARREN
Professor
Faculty of Rehabilitation Medicine
University of Alberta

Phone: 492-7856

PURPOSE OF THIS STUDY:

The purpose of this study is to find out how the physical home environment affects the ability of older persons to stay at home. I will ask questions about your health, your independence in daily and household tasks, and your supports such as family, or friends. I will also examine your physical environment and ask how you feel about your home. All of these may influence how you and others like you are able to live at home for as long as possible. This information will help health care workers and planners to better meet the housing, support and health needs of elderly persons.

PROCEDURES:

If you agree to be in this study, I will visit you in your home for about two hours. The questions will take up to one hour. The rest of the time will be used to look at the physical features of your home. I will look at your rooms, stairs, lights, furniture arrangements and any changes you have made to make life easier for you. I will not be looking for how clean your home is, nor will I need to look into your private belongings. If you are ill or tired, you do not need to follow me throughout your home.

VOLUNTARY PARTICIPATION:

You do not have to take part in this study if you do not want to. If you choose to be in the study, you may change your mind at any time by telling me you do not want to continue. You may also choose not to answer a question. No one will hold this against you. The services you receive will not be changed now or later if you stay in or leave this study.

CONFIDENTIALITY:

Your name and what you say or do will be kept confidential. The questionnaire will be coded with a number and not your name. This sheet will be kept separate from the questionnaire. None of this information will be placed on your health unit records. All the materials will be kept in a locked file that only the researcher may access. Any information presented or written about this study will not describe you as an individual. Only summaries about the whole group will be used.

I will be happy to answer any other questions you may have now or later. If it is after I am gone from your home, please contact myself, Lorna Reimer or the research advisor, Dr. Sharon Warren. Our phone numbers are on the front page.

PARTICIPANT'S STATEMENT:

I have read this information, or someone has read it and described it to me. I _____ consent to be involved in the study "Environmental Influences on Aging in Place."

_____ _____

Participant's Signature Date

_____ _____

Researcher's Signature Date

APPENDIX F - QUESTIONNAIRE

RECORD 1

Date of Interview: _____ ID number: _____ 1-3

Geographical Locale (first digit in ID #): S/A (1) M/V (2)

Client Information:

Age: ____ years 4-6

Gender: M (1) F (2) 7

Marital Status: Mrrd (1) Sing (2) Wid (3) Div/Sep (4) 8

Years Married ____ 9-10

Living Arrangements:

Alone (1) With Spouse Only (2) With Spouse and Others (3)

With Others (4) 11

Total Household ____ 12-13

Number of Years of Formal Education: _____ years 14-15

Annual Household Income: $_____ Category _____ 16-17

Residence Status:

Owner (1) / Renter (2) 18

Age of Home: _____ years 19-20

Residential Tenure in Home: _____ years 21-22

Community Tenure: _____ years 23-24

Type of Dwelling:

Single Family (1) Duplex/Multi Family (2) Apartment (3) Mobile Home (4)

Other (5)_____ 25

Style of Dwelling: Bung (1) 2-Storey (2) Split (3) 26

Other:(4)_____

Services Currently Used (or Used in Past Month):

CHCP: Nursing: No (1) Yes (2) 27

Social Work: No (1) Yes (2) 28

O.T.: No (1) Yes (2) 29

P.T.: No (1) Yes (2) 30

Personal Care: No (1) Yes (2) 31

Homemaking: No (1) Yes (2) 32

Other: No (1) Yes (2) _____ 33

_____

Other Services (N = None, P = Paid, V = Volunteer):

Meals:	N (1) P (2) V (3)	34
Homemaking:	N (1) P (2) V (3)	35
Personal Care:	N (1) P (2) V (3)	36
Professional Care:	N (1) P (2) V (3)	37
Yard/Maintenance:	N (1) P (2) V (3)	38
Day Support:	N (1) P (2) V (3)	39
Visitor:	N (1) P (2) V (3)	40
Delivery:	N (1) P (2) V (3)	41
Transportation:	N (1) P (2) V (3)	42
Other:	N (1) P (2) V (3)	43

SPMSQ

	Right	Wrong
1. What is the date today? _____	+	-
2. What day of the week is it? _____	+	-
3. What is the name of this place? _____	+	-
4. What is your telephone number? _____	+	-
OR What is your street address? _____		
5. How old are you? _____	+	-
6. When were you born? _____	+	-
7. Who is the Prime Minister of Canada now? _____	+	-
8. Who was the Prime Minister just before? _____	+	-
9. What was your mother's maiden name? _____	+	-
10. Subtract 3 from 20 and keep subtracting 3 from each new number, all the way down (to 0). (17, 14, 11, 8, 5, 2)	+	-

TOTAL CORRECT (min. = 7) = _____ 44-45

PERCEIVED HEALTH STATUS

Compared to others your age, how would you rate your overall health?

Excellent (5) Good (4) Fair (3) Poor (2) Bad (1) 46

SOCIAL ENVIRONMENT

Personal Resource Questionnaire - Part II

DIRECTIONS: Below are some statements with which some people agree and other disagree. I will read each statement out loud and you choose the response most appropriate for you. There is no *right* or *wrong* answer. The card in front of you lists the choices.

7	6	5	4	3	2	1
Strongly Agree	Agree	Somewhat Agree	Neutral	Somewhat Disagree	Disagree	Strongly Disagree

a. There is someone I feel close to who makes me feel secure
7 6 5 4 3 2 1 47

b. I belong to a group in which I feel important
7 6 5 4 3 2 1 48

c. People let me know that I do well at my work (job, homemaking)
7 6 5 4 3 2 1 49

d. I can't count on my relatives and friends to help me with problems
(7 6 5 4 3 2 1) 1 2 3 4 5 6 7 50

e. I have enough contact with the person who makes me feel special
7 6 5 4 3 2 1 51

f. I spend time with others who have the same interests that I do
7 6 5 4 3 2 1 52

g. There is little opportunity in my life to be giving and caring to another person
(7 6 5 4 3 2 1) 1 2 3 4 5 6 7 53

h. Others let me know that they enjoy working with me (job, committees, projects)
7 6 5 4 3 2 1 54

i. There are people who are available if I needed help over an extended period of time
7 6 5 4 3 2 1 55

j. There is no one to talk to about how I am feeling
(7 6 5 4 3 2 1) 1 2 3 4 5 6 7 56

k. Among my group of friends we do favours for each other
7 6 5 4 3 2 1 57

l. I have the opportunity to encourage others to develop their interests and skills	7 6 5 4 3 2 1	58
m. My family lets me know that I am important for keeping the family running	7 6 5 4 3 2 1	59
n. I have relatives or friends who will help me out even if I can't pay them back	7 6 5 4 3 2 1	60
o. When I am upset, there is some one I can be with who lets me be myself	7 6 5 4 3 2 1	61
p. I feel no one has the same problems as I	(7 6 5 4 3 2 1) 1 2 3 4 5 6 7	62
q. I enjoy doing little "extra" things that make another person's life more pleasant	7 6 5 4 3 2 1	63
r. I know that others appreciate me as a person	7 6 5 4 3 2 1	64
s. There is someone who loves and cares about me	7 6 5 4 3 2 1	65
t. I have people to share social events and fun activities with	7 6 5 4 3 2 1	66
u. I am responsible for helping provide for another person's needs	7 6 5 4 3 2 1	67
v. If I need advice there is someone who would assist me to work out a plan for dealing with the situation	7 6 5 4 3 2 1	68
w. I have a sense of being needed by another person	7 6 5 4 3 2 1	69
x. People think that I'm not as good a friend as I should be	(7 6 5 4 3 2 1) 1 2 3 4 5 6 7	70
y. If I got sick there is someone to give me advice about caring for myself	7 6 5 4 3 2 1	71

END OF RECORD 1

PERCEIVED ENVIRONMENT

RECORD 2

ID: _____ 1-3

I would like to know how you feel about a number of things. I will read the answers and you can choose the answer which best fits you.

My house/apt. holds many good memories for me.

7 6 5 4 3 2 1 4

My house/apt. is more than just shelter, it is my home.

7 6 5 4 3 2 1 5

If I had to move, I would not feel sad to leave this place.

(1 2 3 4 5 6 7) 7 6 5 4 3 2 1 6

My home supports me to do the things I want and need to do.

7 6 5 4 3 2 1 7

I feel attached to my home, as if it was a part of me.

7 6 5 4 3 2 1 8

The things that surround me, are important to me (e.g. pictures, ornaments, furniture).

7 6 5 4 3 2 1 9

Overall, my house/apt. is the best home for me.

7 6 5 4 3 2 1 10

What areas/rooms of your house/apt. are most supportive to you? (Or, are there rooms that it is easier for you do everyday tasks in?)

11-17

What areas/rooms are not supportive to you?

18-23

What areas/rooms do you not use or do not need to use?

24-29

What changes have you made to your home to make it easier to live in?

30-35

Multilevel Assessment Instrument

Subjective Housing

1. How satisfied are you with this (house/apt.) as a place to live?
   Are you:
   not very satisfied, 1
   fairly satisfied, or 2
   very satisfied? 3 36

2. Overall, how attractive do you consider the inside of you (house/apt.)?
   Is it:
   very attractive, 3
   fairly attractive, or 2
   not very attractive? 1 37

3. How satisfied are you with the state of repairs or maintenance of your (house/apt.)? Are you:
   very satisfied, 3
   fairly satisfied, or 2
   not very satisfied? 1 38

4. Would you say you have all the space you need in this (house/apt.), that it is a little small, or that it is much too small?
   All you need 3
   A little small 2
   Much too small 1 39

5. How satisfied are you with the amount of privacy you have here: that is, being able to do what you wish without other people seeing you or hearing you?
   Would you say that you are:
   very satisfied, 3
   fairly satisfied, or 2
   not very satisfied? 1 40

Subjective Neighborhood

6. How much does any noise from the outside bother you in your (house/apt.)?
   Does it bother you:
   a lot 1
   a little, or 2
   not much? 3 41

7. Would you say that you like this neighborhood:
   very much, 4
   somewhat, 3
   not much, or 2
   not at all? 1 42

8. How convenient is this place for visiting with friends?
   Is it:

   very convenient, 3
   fairly convenient, or 2
   not very convenient? 1 43

9. What about the condition of the houses in this neighborhood?
   Would you say that they are:

   very well kept up, 3
   fairly well kept up, or 2
   not very well kept up? 1 44

10. What about the people who live around here? As neighbors, would you say that they are:

    very good neighbors, 3
    fairly good neighbors, or 2
    not very good neighbors? 1 45

Personal Security

11. Do you feel safe in your (house/apt.) at night?

    Yes 2
    No 1 46

12. Do you feel safe in your neighborhood at night?

    Yes 2
    No 1 47

END OF RECORD 2

FUNCTIONAL ABILITY

RECORD 3

The Assessment Tool - List of ADL and IADL ID: _____ 1-3

DIRECTIONS: Do you perform the following activities alone and without difficulty? You may answer Yes, No, or Not Applicable if you do not have to do that task.

General Accessibility	N	Y	NA	
1. Open or close doors	1	2	3	4
2. Lock or unlock doors	1	2	3	5
3. Operate light switches	1	2	3	6
4. Open or close curtains, windows	1	2	3	7
5. Adjust the heating (air conditioning)	1	2	3	8
6. Go from one room to another and move about in each	1	2	3	9
7. Get to the toilet	1	2	3	10
8. Walk up or down the stairs	1	2	3	11
9. Use the elevator	1	2	3	12
10. Use the balcony, front porch	1	2	3	13

COMMENTS: _____

_____

Getting Up, Dressing and Tidying Bedroom				
11. Move on or off bed	1	2	3	14
12. Take shoes, slippers, clothes out or put in closet	1	2	3	15
13. Take clothes off or put on	1	2	3	16
14. Take shoes, slippers off or put on	1	2	3	17
15. Make bed, change sheets	1	2	3	18

COMMENTS: _____

_____

Bathing and Personal Hygiene At Basin				
16. Turn faucets on or off	1	2	3	19
17. Regulate water temperature	1	2	3	20
18. Wash hands and face	1	2	3	21
19. Wash body (basin)	1	2	3	22
20. Wash hair (basin)	1	2	3	23
21. Comb or do hair	1	2	3	24

	N	Y	NA	
22. Brush teeth, dentures or use toothpaste, denture cleaner	1	2	3	25
23. Shave, using razor or electric razor	1	2	3	26

COMMENTS: _____

_____

Taking a Shower

24. Get in or out of shower stall or bathtub	1	2	3	27
25. Turn shower controls on or off & adjust water temp.	1	2	3	28
26. Wash or rinse body and hair	1	2	3	29
27. Reach towel before stepping out	1	2	3	30

COMMENTS: _____

_____

Taking a Bath

28. Get in or out of shower stall or bathtub	1	2	3	31
29. Sit down on or get up from bottom of tub	1	2	3	32
30. Put or pull plug in bathtub	1	2	3	33
31. Turn faucets on or off	1	2	3	34
32. Wash or rinse body and hair	1	2	3	35
33. Reach towel before stepping out	1	2	3	36
34. Clean bathtub or shower stall	1	2	3	37

COMMENTS: _____

_____

Using the Toilet

35. Sit down or get up	1	2	3	38
36. Reach or use toilet paper	1	2	3	39
37. Flush the toilet	1	2	3	40
38. Clean the toilet	1	2	3	41

COMMENTS: _____

_____

Preparing Meals

39. Turn sink faucets on or off and adjust water temp.	1	2	3	42
40. Use small kitchen appliances	1	2	3	43
41. Turn on or off hood fan, stove, oven, dish washer	1	2	3	44
42. Take food out of or put in oven	1	2	3	45
43. Take food out of or put in refrigerator	1	2	3	46
44. Open or close drawers and cupboard doors	1	2	3	47

	N	Y	NA	
45. Take dishes/pots/pans/food out or put in cupboards	1	2	3	48
46. Carry food and dishes from place to place	1	2	3	49
47. Move on or off chair	1	2	3	50
48. Peel, grate, cut vegies, fruits, meat, cheese, bread	1	2	3	51
50. Check cooking process	1	2	3	52
51. Fill up or empty pots	1	2	3	53
52. Wash or dry dishes	1	2	3	54
53. Wipe the counter tops, table, stove, oven, fridge	1	2	3	55
54. Purchase or store groceries	1	2	3	56
55. Dispose of garbage	1	2	3	57

COMMENTS: _____

_____

Doing the Laundry

56. Do hand washing	1	2	3	58
57. Carry laundry bag or basket	1	2	3	59
58. Fill or empty washing machine	1	2	3	60
59. Read or work washing machine controls	1	2	3	61
60. Fill or empty dryer	1	2	3	62
61. Read or work dryer controls	1	2	3	63
62. Hang up washing	1	2	3	64
63. Iron clothes	1	2	3	65

COMMENTS: _____

_____

Cleaning the House

64. Dust	1	2	3	66
65. Use vacuum cleaner or broom	1	2	3	67
66. Wipe or wash floor	1	2	3	68
67. Wash windows	1	2	3	69

COMMENTS: _____

_____

Using the Telephone

68. Answer phone	1	2	3	70
69. Dial a number	1	2	3	71

COMMENTS: _____

_____

Enjoying Leisure/Doing Business	N	Y	NA	
70. Move on or off sofa/chair	1	2	3	72
71. Turn radio or television on or off and select channels	1	2	3	73
72. Collect mail	1	2	3	74

COMMENTS: _____

_____

Taking Medications

73. Take medication	1	2	3	75

COMMENTS: _____

_____

END OF RECORD 3

PHYSICAL ENVIRONMENT

RECORD 4

The Assessment Tool ID: _____ 1-3

NA will be scored for features not present in the home or not used by the subject, i.e., NA will be scored for all wheelchair accessibility questions (#6) if the subject does not use a wheelchair, or NA will be scored for homes that have no balcony (#10) or elevator (#9).

GENERAL ACCESSIBILITY

1. OPEN OR CLOSE DOORS	N	Y	NA	
1.1 lever type handles	1	2	3	4
1.2 door strap	1	2	3	5
1.3 non slip cover on round door knob	1	2	3	6
1.4 non essential door removed	1	2	3	7
1.5 door frame adjusted to fit	1	2	3	8
1.6 off-set hinges	1	2	3	9
1.7 greased/smooth hinges	1	2	3	10
1.8 locks changed for ease of opening	1	2	3	11

COMMENTS_____

2. LOCK OR UNLOCK DOORS				
2.1 adequate lighting at front door or access to light switches	1	2	3	12
2.2 easy-to-operate lock	1	2	3	13
2.3 aids or devices to increase grip on locks or keys	1	2	3	14
2.4 outside shelf to hold parcels or objects while unlocking door	1	2	3	15

COMMENTS_____

2.5 inside table or shelf to place objects on	1	2	3	16
2.6 reduced door opening pressure	1	2	3	17
2.7 accessible and usable intercom and buzzer:				
- appropriate height	1	2	3	18
2.8 - large button/colour or texture coded	1	2	3	19

COMMENTS_____

3. OPERATE LIGHT SWITCHES				
3.1 light switches at functional height	1	2	3	20
3.2 large and easy to operate light switch on wall	1	2	3	21
- tablelamps	1	2	3	22

		N Y NA	
3.3	light switch located at entrance on dwelling	1 2 3	23
3.4	- at room entrance	1 2 3	24
3.5	- bedside	1 2 3	25
3.6	three-way switches	1 2 3	26
3.7	night light	1 2 3	27
3.8	light strip on switches	1 2 3	28

COMMENTS_____

4. OPEN OR CLOSE CURTAINS, WINDOWS

4.1	unnecessary curtains No = 2; Yes = 1	1 2 3	29
4.2	long rope or stick to open or close curtains	1 2 3	30
4.3	modified window parts:		
	- oiled hinges/gliding surfaces	1 2 3	31
4.4	- smooth window casing	1 2 3	32
4.5	- changed handles on windows	1 2 3	33
4.6	- easy sliding surfaces with nylon, teflon	1 2 3	34

COMMENTS_____

5. ADJUST THE HEATING (AIR CONDITIONING)

5.1	adequate lighting	1 2 3	35
5.2	lowered (raised) thermostat	1 2 3	36
5.3	thermostat easy to read, adjust	1 2 3	37
5.4	lengthened, enlarged, modified thermostat control	1 2 3	38

COMMENTS_____

6. GO FROM ROOM TO ROOM, & MOVE ABOUT IN EACH ROOM

6.1	make full use of natural lighting	1 2 3	39
6.2	sufficient lighting in work places, eliminate glare	1 2 3	40
6.3	handrail in hall, work places, staircases	1 2 3	41
6.4	functional relationships on interior space (distances between bedroom, bathroom)	1 2 3	42
6.5	obstacles (rugs, carpets) N = 2; Y = 1	1 2 3	43
6.6	removed or reduced doorsill	1 2 3	44
6.7	differences in floor height eliminated with use of same type of floor covering	1 2 3	45
6.8	damaged floors N = 2; Y = 1	1 2 3	46
6.9	stable furniture used as support	1 2 3	47
6.10	furniture rearranged for ease of movement	1 2 3	48

		N	Y	NA	
6.11	wheelchair accessibility: sufficient space to turn	1	2	3	49
6.12	- removed doors	1	2	3	50
6.13	- off-set hinges on doors	1	2	3	51

COMMENTS_____

7. GET TO THE TOILET

7.1	light switch at restroom entrance	1	2	3	52
7.2	three-way light switches	1	2	3	53
7.3	dimmer switch/night light between bedroom & bathroom	1	2	3	54
7.4	urinal or commode chair in the bedroom	1	2	3	55
7.5	obstacles No = 2; Yes = 1	1	2	3	56
7.6	easy-to-open bathroom door	1	2	3	57
7.7	wheelchair accessibility	1	2	3	58
7.8	emergency call system	1	2	3	59

COMMENTS_____

8. WALK UP OR DOWN THE STAIRS

8.1	three-way light switches	1	2	3	60
8.2	adequate lighting	1	2	3	61
8.3	open risers N = 2; Y = 1	1	2	3	62
8.4	maximum height of risers: 18 cm	1	2	3	63
8.5	step depth: - max. 26.5 cm	1	2	3	64
8.6	- carpet removed to increase depth	1	2	3	65
8.7	nosing: - max. 0.5 cm	1	2	3	66
8.8	- bevelled nosing	1	2	3	67
8.9	- colour contrast on nosing	1	2	3	68
8.10	patterned carpet N = 2; Y = 1	1	2	3	69
8.11	handrail both sides of stairs	1	2	3	70
8.12	balusters on open side	1	2	3	71
8.13	handrail projecting beyond top and bottom of stairs/ramp	1	2	3	72
8.14	ramp gradient: 1:12 to 1:20	1	2	3	73
8.15	loose nosing, broken step N = 2; Y = 1	1	2	3	74
8.16	chair lift/one passenger elevator	1	2	3	75

COMMENTS_____

END OF RECORD 4

RECORD 5

ID: _____ 1-3

		N	Y	NA	
9. USE THE ELEVATOR					
9.1	adjusted closing speed and force	1	2	3	4
9.2	functional height of control panel & floor indicator	1	2	3	5
9.3	legible control panel & floor indicator	1	2	3	6
9.4	visual or sound cues to indicate arrival and direction of elevator	1	2	3	7
9.5	handrail in elevator	1	2	3	8
9.6	chair or bench in hallway & main entrance	1	2	3	9

COMMENTS_____

10. USE THE BALCONY, FRONT PORCH					
10.1	adequate lighting in exterior areas/visual cues	1	2	3	10
10.2	non-glare, non-slip surfaces on balcony, porch, sidewalk, patio	1	2	3	11
10.3	ramp 1:12	1	2	3	12
10.4	reduce walkway-ground slope 1:20	1	2	3	13
10.5	sidewalk-walkway 1:12	1	2	3	14
10.6	protective overhang from direct exposure to sun	1	2	3	15
10.7	wind protection on balcony	1	2	3	16
10.8	solid railing around balcony at safe height	1	2	3	17

COMMENTS_____

GETTING UP, DRESSING AND TIDYING BEDROOM

11. MOVE ON OR OFF BED					
11.1	bed raised with wooden blocks	1	2	3	18
11.2	board under mattress	1	2	3	19
11.3	firm mattress	1	2	3	20

COMMENTS_____

12. TAKE SHOES, SLIPPERS, CLOTHES IN/OUT CLOSET					
12.1	adequate lighting in room, closet	1	2	3	21
12.2	drawers on ball-bearings	1	2	3	22
12.3	"D" handles on drawers	1	2	3	23
12.4	shelf near floor for shoes, or lower top shelf	1	2	3	24
12.5	adjustable shelves	1	2	3	25
12.6	pull-out shelves/racks for clothing	1	2	3	26
12.7	transparent shelving for items above eyes	1	2	3	27
12.8	adequate accessible storage space	1	2	3	28

		N	Y	NA	
12.9	label shelves, drawers (colour, texture/pictures)	1	2	3	29

COMMENTS_____

13. TAKE CLOTHES OFF OR PUT ON

13.1	adequate lighting	1	2	3	30
13.2	bench/solid chair in bedroom	1	2	3	31
13.3	full-length mirror	1	2	3	32

COMMENTS_____

14. TAKE SHOES, SLIPPERS OFF OR PUT ON

14.1	bench/solid chair in bedroom and hallway	1	2	3	33

COMMENTS_____

15. MAKE BED, CHANGE SHEETS

15.1	furniture arranged for ease of movement	1	2	3	34
15.2	not less than 46 cm around bed	1	2	3	35
15.3	standard size mattress	1	2	3	36

COMMENTS_____

Bathing and Personal Hygiene At Basin

16. TURN FAUCETS ON OR OFF

16.1	lever type faucet handles	1	2	3	37
16.2	single action faucets	1	2	3	38
16.3	technical aids: - extended faucet handles	1	2	3	39
16.4	- "faucet turner"	1	2	3	40
16.5	cleared space underneath sink/insulate plumbing	1	2	3	41
16.6	faucets at side or closer to front	1	2	3	42

COMMENTS_____

17. REGULATE WATER TEMPERATURE

17.1	hot water temperature set to 46'C	1	2	3	43

COMMENTS_____

18. WASH HANDS AND FACE

18.1	task lighting	1	2	3	44
18.2	adequate storage for personal care items	1	2	3	45
18.3	recessed soap dish	1	2	3	46
18.4	raised/lowered basin	1	2	3	47
18.5	basin well braced	1	2	3	48
18.6	hand towel located within easy reach	1	2	3	49
18.7	cleared space under basin/insulate plumbing	1	2	3	50

COMMENTS_____

		N	Y	NA	
19. WASH BODY (BASIN)					
19.1	heat lamp/electric heater with auto shut off	1	2	3	51
19.2	adjusted/adapted mirror (slanted mirror)	1	2	3	52
19.3	adequate storage for personal care items	1	2	3	53
19.4	space for clothes	1	2	3	54

COMMENTS_____

20. WASH HAIR (BASIN)					
20.1	easy access to shampoo dispenser	1	2	3	55
20.2	flexible spray hose	1	2	3	56

COMMENTS_____

21. COMB OR DO HAIR					
21.1	adjusted/adapted mirror: - correct height	1	2	3	57
21.2	- tilting mirror	1	2	3	58
21.3	- magnifying mirror	1	2	3	59
21.4	adequate storage for access to personal care items	1	2	3	60
21.5	drawer dividers for easy location of items	1	2	3	61
21.6	activity in sitting if preferred	1	2	3	62

COMMENTS_____

22. BRUSH TEETH, DENTURES OR USE TOOTHPASTE, CLEANER					
22.1	relocated/redesigned holders	1	2	3	63
22.2	adequate storage for personal care items	1	2	3	64
22.3	drawer dividers for easy location of items	1	2	3	65

COMMENTS_____

23. SHAVE, USING RAZOR OR ELECTRIC RAZOR					
23.1	lighting above/beside mirror	1	2	3	66
23.2	adjusted/adapted mirror	1	2	3	67
23.3	electric outlet in bathroom at appropriate height	1	2	3	68
23.4	new grounded outlet	1	2	3	69
23.5	adequate storage for personal care items	1	2	3	70

COMMENTS_____

END OF RECORD 5

RECORD 6

ID: _____ 1-3

Taking a Shower		N	Y	NA	
24. GET IN OR OUT OF SHOWER STALL OR BATHTUB					
24.1	eliminated/reduced step	1	2	3	4
24.2	vertical grab bar	1	2	3	5
24.3	slip resistant floor in/out shower stall	1	2	3	6
24.4	transfer board	1	2	3	7
24.5	adequate floor drainage	1	2	3	8
COMMENTS_____					
25. TURN SHOWER CONTROLS ON/OFF & ADJUST WATER TEMP.					
25.1	controls easy to read, reach & operate	1	2	3	9
25.2	water control knob on shower head	1	2	3	10
25.3	thermostatic faucets	1	2	3	11
25.4	grab bar as stabilizer	1	2	3	12
COMMENTS_____					
26. WASH OR RINSE BODY AND HAIR					
26.1	adequate lighting	1	2	3	13
26.2	slip resistant bottom	1	2	3	14
26.3	recessed soap dispenser with ledge at suitable height when standing or sitting	1	2	3	15
26.4	toilet accessories within easy reach	1	2	3	16
26.5	grab bars	1	2	3	17
26.6	shower stool/bench	1	2	3	18
26.7	hand-held shower on vertical rod or high and low mounting brackets	1	2	3	19
26.8	translucent and watertight shower curtain or tempered glass door	1	2	3	20
26.9	no water leaking out of shower stall or tub	1	2	3	21
26.10	shower walls treated with waterproof materials	1	2	3	22
COMMENTS_____					
27. REACH TOWEL BEFORE STEPPING OUT					
27.1	heat lamp/electric heater with auto shut off	1	2	3	23
27.2	towel rail within easy reach	1	2	3	24
27.3	grab bar	1	2	3	25
COMMENTS_____					

Taking a Bath		N	Y	NA	
28. GET IN OR OUT OF BATHTUB					
28.1	well anchored grab bars at appropriate height	1	2	3	26
28.2	- easy clamp on/off grab bar	1	2	3	27
28.3	removable bath bench	1	2	3	28
28.4	non-slip flooring outside tub	1	2	3	29
COMMENTS_____					
29. SIT DOWN ON OR GET UP FROM BOTTOM OF TUB					
29.1	well anchored grab bars at appropriate height	1	2	3	30
29.2	- easy hydraulic seat	1	2	3	31
29.3	non-slip flooring inside tub	1	2	3	32
COMMENTS_____					
30. PUT OR PULL PLUG IN BATHTUB					
30.1	lever type mechanism	1	2	3	33
30.2	chain on plug	1	2	3	34
30.3	flat type plug or larger control	1	2	3	35
30.4	outline of drain in contrasting colour	1	2	3	36
COMMENTS_____					
31. TURN FAUCETS ON OR OFF					
31.1	lever type	1	2	3	37
31.2	single action faucet	1	2	3	38
31.4	extension on faucet handle	1	2	3	39
COMMENTS_____					
32. WASH OR RINSE BODY AND HAIR					
32.1	draft eliminated	1	2	3	40
32.2	adequate lighting	1	2	3	41
32.3	deep recess soap dish at correct height	1	2	3	42
32.4	toilet accessories within easy reach	1	2	3	43
32.5	grab bars	1	2	3	44
32.6	bath bench/stool	1	2	3	45
32.7	hand-held shower or adjustable shower hose on vertical pole	1	2	3	46
COMMENTS_____					
33. REACH TOWEL BEFORE STEPPING OUT					
33.1	heat lamp/electric heater with auto shut off	1	2	3	47
33.2	towel rail within easy reach	1	2	3	48
COMMENTS_____					

34. CLEAN BATHTUB OR SHOWER STALL	N Y NA	
34.1 vapour proof lighting	1 2 3	49
34.2 easy-to-clean wall surfaces	1 2 3	50
34.3 treated tub enamel	1 2 3	51
34.4 fungus-proof caulking	1 2 3	52
34.5 adequate ventilation to prevent moisture	1 2 3	53

COMMENTS_____

Using the Toilet

35. SIT DOWN OR GET UP		
35.1 single or bilateral grab bar at correct height, place and position	1 2 3	54
35.2 adjust height of toilet seat: - RTS	1 2 3	55
35.3 - commode chair	1 2 3	56

COMMENTS_____

36. REACH OR USE TOILET PAPER		
36.1 position of toilet roll easy to access	1 2 3	57
36.2 toilet roll easy to replace & easy to use	1 2 3	58

COMMENTS_____

37. FLUSH THE TOILET		
37.1 enlarge, lengthen or adapt handle	1 2 3	59
37.2 flush mechanism in reachable position	1 2 3	60
37.3 grab bar behind toilet	1 2 3	61

COMMENTS_____

38. CLEAN THE TOILET		
38.1 adequate lighting placement	1 2 3	62
38.2 plumbing work (in good condition)	1 2 3	63

COMMENTS_____

Preparing Meals

39. TURN SINK FAUCETS ON/OFF, & ADJUST WATER TEMP		
39.1 cleared space underneath sink/insulate plumbing	1 2 3	64
39.2 lever type faucet handles	1 2 3	65
39.3 hand sprayer with finger control	1 2 3	66
39.4 single action faucet	1 2 3	67

COMMENTS_____

40. USE SMALL KITCHEN APPLIANCES		
40.1 special indicators on appliances for speed force, etc.	1 2 3	68

		N Y NA	
40.2	adapted appliances (extra handles, lengthened knobs, etc.)	1 2 3	69
40.3	easy access to storage of key items	1 2 3	70
40.4	permanent on/off connections for key items	1 2 3	71
40.5	easy access to outlets	1 2 3	72
40.6	large and easy-to-hold plugs	1 2 3	73
40.7	improved circuit loading	1 2 3	74

COMMENTS_____

41. TURN ON OR OFF HOOD FAN, STOVE & OVEN

41.1	controls easy to read, reach & manipulate	1 2 3	75
41.2	accentuated key position with cues on controls	1 2 3	76
41.3	time control mechanism used	1 2 3	77
41.4	controls at the front preferred	1 2 3	78

COMMENTS_____

END OF RECORD 6

RECORD 7

ID: _____ 1-3

		N	Y	NA	
42. TAKE FOOD OUT OF OR PUT IN OVEN					
42.1	pull out shelf below built-in oven for hot items	1	2	3	4
42.2	use movable carts/tables	1	2	3	5
42.3	easy to pull/push oven shelves	1	2	3	6
42.4	oven doors (side opening preferred)	1	2	3	7
42.5	microwave oven	1	2	3	8

COMMENTS_____

43. TAKE FOOD OUT OF OR PUT IN REFRIGERATOR					
43.1	adequate lighting	1	2	3	9
43.2	adjustable shelving, half-shelves and baskets	1	2	3	10
43.3	refrigerator with side-by-side doors	1	2	3	11
43.4	small refrigerator raised	1	2	3	12

COMMENTS_____

44. OPEN OR CLOSE DRAWERS AND CUPBOARD DOORS					
44.1	storage designed to ensure maximum use of easily accessible cupboards and drawers	1	2	3	13
44.2	"D" type handles on cupboards/drawers	1	2	3	14
44.3	drawers on ball-bearings	1	2	3	15
44.4	install new hardware on doors	1	2	3	16
44.5	eliminated doors	1	2	3	17

COMMENTS_____

45. TAKE DISHES, POTS, PANS, FOOD OUT/IN CUPBOARDS					
45.1	adequate lighting	1	2	3	18
45.2	increased storage at functional height:				
	- add shelves below cupboards	1	2	3	19
45.3	- basket hung under existing shelves	1	2	3	20
45.4	- lowered shelves	1	2	3	21
45.5	- dish rack on counter	1	2	3	22
45.6	- mobile storage unit	1	2	3	23
45.7	transparent shelving for shelves above eye level	1	2	3	24
45.8	reduced depth of wall cupboards shelving above shoulder level	1	2	3	25
45.9	pull-out storage units under counter	1	2	3	26
45.10	lazy susan at corners	1	2	3	27
45.11	colour, texture coded for easy location (vis impd)	1	2	3	28

		N	Y	NA	
45.12	sturdy and safe bench/stool	1	2	3	29

COMMENTS_____

46. CARRY FOOD AND DISHES FROM PLACE TO PLACE

46.1	storage close to table/appliances	1	2	3	30
46.2	movable cart to carry food/dishes from stove to table	1	2	3	31
46.3	reduced distance between work areas	1	2	3	32
46.4	countertop all at same level between refrigerator, sink and range (cooktop)	1	2	3	33
46.5	obstacles removed	1	2	3	34
46.6	damaged flooring N = 2; Y = 1	1	2	3	35

COMMENTS_____

47. MOVE ON OR OFF CHAIR

47.1	chair raised with wooden blocks	1	2	3	36
47.2	chair with arm-rests, smooth and easy to grasp	1	2	3	37
47.3	ejectable seat	1	2	3	38
47.4	firm cushion	1	2	3	39

COMMENTS_____

48. PEEL, GRATE, CUT VEGETABLES, FRUITS, MEAT, CHEESE, BREAD

48.1	food processor	1	2	3	40
48.2	pull-out lapboard	1	2	3	41
48.3	sink board on top of sink	1	2	3	42
48.4	"roll-about" chair with locks to reduce exertion	1	2	3	43

COMMENTS_____

49. OPEN CONTAINER, CANS, JARS

49.1	V-shaped jar opener under cupboards	1	2	3	44
49.2	wall or counter mounted can opener	1	2	3	45
49.3	electric can opener	1	2	3	46
49.4	adapted can opener	1	2	3	47
49.5	aids or devices (jar openers, rubber hand grip)	1	2	3	48

COMMENTS_____

50. CHECK COOKING PROCESS

50.1	task lighting	1	2	3	49
50.2	slanted mirror if sitting is needed	1	2	3	50
50.3	range or stove at functional height	1	2	3	51
50.4	seating/high stool in kitchen to reduce exertion	1	2	3	52

		N	Y	NA	
50.5	electric appliances with automatic shut-off mechanism: - frypan	1	2	3	53
50.6	- microwave oven	1	2	3	54
50.7	- toaster oven	1	2	3	55
50.8	- kettle	1	2	3	56
50.9	smoke detector	1	2	3	57
50.10	fire extinguisher	1	2	3	58

COMMENTS_____

51. FILL UP OR EMPTY POTS

51.1	eliminated space between counter, appliances and sink	1	2	3	59
51.2	movable carts for use between cooktop/stove & sink	1	2	3	60
51.3	long spout or flexible hose to reach over counter	1	2	3	61

COMMENTS_____

52. WASH OR DRY DISHES

52.1	task lighting	1	2	3	62
52.2	counter space on either side of sink	1	2	3	63
52.3	dishwasher controls adapted (lever, colour or texture coded)	1	2	3	64
52.4	portable dishwasher: - easy to connect	1	2	3	65
52.5	- easy to move	1	2	3	66

COMMENTS_____

53. WASH OR WIPE THE COUNTER TOPS, TABLE, STOVE, OVEN, FRIDGE

53.1	countertop with easy cleaning material preferred	1	2	3	67
53.2	hood fan	1	2	3	68
53.3	self cleaning oven	1	2	3	69
53.4	self defrosting freezer or refrigerator	1	2	3	70

COMMENTS_____

54. PURCHASE OR STORE GROCERIES

54.1	adequate cold storage space for one week or more supplies	1	2	3	71
54.2	adequate storage space (added pantry, shelves, baskets, etc.)	1	2	3	72

COMMENTS_____

55. DISPOSE OF GARBAGE

55.1	garbage can easy to use	1	2	3	73
55.2	garbage can at good height, good location	1	2	3	74
55.3	garbage can on wheels/movable cart	1	2	3	75
55.4	easy handle / opening mechanism on garbage chute	1	2	3	76

COMMENTS_____

RECORD 8

ID: _____ 1-3

Doing the Laundry

		N	Y	NA	
56. DO HAND WASHING					
56.1	accessible location or equipment for handwashing	1	2	3	4
56.2	cleared space below sink to sit/insulate plumbing	1	2	3	5

COMMENTS_____

57. CARRY LAUNDRY BAG OR BASKET					
57.1	adequate lighting	1	2	3	6
57.2	movable cart to transport clothes	1	2	3	7
57.3	laundry chute from upper levels	1	2	3	8
57.4	handrail on stairs	1	2	3	9
57.5	relocate washer/dryer to usable space	1	2	3	10

COMMENTS_____

58. FILL OR EMPTY WASHING MACHINE					
58.1	adjust/increase lighting, task lighting	1	2	3	11
58.2	mirror at angle to see inside washing machine	1	2	3	12

COMMENTS_____

59. READ OR WORK WASHING MACHINE CONTROLS					
59.1	controls easy to read and use	1	2	3	13
59.2	colour and texture coded controls	1	2	3	14
59.3	lever type controls	1	2	3	15
59.4	relocate controls within easy reach	1	2	3	16

COMMENTS_____

60. FILL OR EMPTY DRYER					
60.1	small dryer with front opening, place on counter	1	2	3	17
60.2	space in front of dryer to allow easy reach	1	2	3	18
60.3	door handle easy to grip	1	2	3	19
60.4	space to place or fold clothing	1	2	3	20

COMMENTS_____

61. READ OR WORK DRYER CONTROLS					
61.1	controls easy to see and use colour/texture coded	1	2	3	21
61.2	lever handle for controls	1	2	3	22
61.3	controls within easy reach	1	2	3	23

COMMENTS_____

		N Y NA	
62. HANG UP WASHING			
62.1	wide and stable platform	1 2 3	24
62.2	adjusted height of clotheslines	1 2 3	25
62.3	portable lightweight clothes rack	1 2 3	26

COMMENTS_____

63. IRON CLOTHES			
63.1	task lighting	1 2 3	27
63.2	adjust ironing board to sitting position	1 2 3	28
63.3	stable board/stable iron	1 2 3	29
63.4	board--easily stored	1 2 3	30
63.5	easy access to wall outlet	1 2 3	31
63.6	ease of use placing plug into outlet	1 2 3	32
63.7	ironing space with built-in ironing centre including iron, ironing board, built-in lighting, etc.	1 2 3	33
63.8	guide on iron for the blind	1 2 3	34
63.9	iron with automatic shut-off	1 2 3	35

COMMENTS_____

Cleaning the House

64. DUST			
64.1	cluttered room N = 2; Y = 1	1 2 3	36
64.2	shelves with doors for ornaments	1 2 3	37
64.3	air conditioner if exposed to high dust pollution	1 2 3	38
64.4	recently cleaned air ducts and changed filters	1 2 3	39

COMMENTS_____

65. USE VACUUM CLEANER OR BROOM			
65.1	light vacuum-cleaner with electric carpet brush	1 2 3	40
65.2	central vacuum system	1 2 3	41
65.3	accessible height of electrical outlets	1 2 3	42
65.4	size of plug (male) easy to grasp	1 2 3	43
65.5	carpet in kitchen None = 2; Yes = 1	1 2 3	44
65.6	space between furniture	1 2 3	45

COMMENTS_____

66. WIPE OR WASH FLOOR			
66.1	slip resistant, easy-to-clean flooring material	1 2 3	46
66.2	hard floor surface or tight pile carpet	1 2 3	47
66.3	movable carts/bucket on wheels	1 2 3	48

N Y NA

66.4 storage cart and cleaning supplies in one place and in different parts of the house (kitchen, bathroom, etc.) 1 2 3 49

COMMENTS_____

67. WASH WINDOWS

67.1 reduced dirt exposure from inside (hood fan over stove, dehumidifier) 1 2 3 50

67.2 easy opening windows to facilitate cleaning:

- removable sliders 1 2 3 51

67.3 - easy to operate hardware 1 2 3 52

COMMENTS_____

Using the Telephone

68. ANSWER PHONE

68.1 increased number of available "jacks" 1 2 3 53

68.2 chair by telephone 1 2 3 54

68.3 louder signal/bell 1 2 3 55

68.4 bell or flashing light link-up 1 2 3 56

68.5 cordless phone 1 2 3 57

68.6 adapted phone for special needs:

- volume regulation 1 2 3 58

68.7 - enlarge amplifier 1 2 3 59

68.8 quiet phone space or phone within easy access 1 2 3 60

COMMENTS_____

69. DIAL A NUMBER

69.1 separate lighting near telephone 1 2 3 61

69.2 telephone with memory (auto dialling) 1 2 3 62

69.3 touchtone telephone 1 2 3 63

69.4 large numbers 1 2 3 64

69.5 colour contrasting numbers 1 2 3 65

69.6 emergency call bell or link up with a central station in case of distress or illness 1 2 3 66

COMMENTS_____

Enjoying Leisure/Doing Business

70. MOVE ON OR OFF SOFA/RECLINER

70.1 raised sofa/chair with wooden blocks 1 2 3 67

70.2 smooth & easy to grasp armrests 1 2 3 68

		N	Y	NA	
70.3	ejectable seat	1	2	3	69
70.4	board under cushion	1	2	3	70
70.5	firm cushion	1	2	3	71

COMMENTS_____

71. TURN RADIO OR TELEVISION ON/OFF AND SELECT CHANNELS

71.1	remote control	1	2	3	72
71.2	easy to handle or read controls	1	2	3	73
71.3	enlarged colour coded controls	1	2	3	74
71.4	colour contrasting controls	1	2	3	75
71.5	lever or push button controls	1	2	3	76

COMMENTS_____

END OF RECORD 8

RECORD 9

!D: _____ 1-3

72. COLLECT MAIL		N	Y	NA	
72.1	functional height or location (can see inside)	1	2	3	4
72.2	mail box easy to empty with no rough edge	1	2	3	5
72.3	basket/shelf below mail box opening	1	2	3	6
72.4	enlarged key, simple or no lock mechanism	1	2	3	7

COMMENTS_____

Taking Medications

73. TAKE MEDICATION

73.1	medicine cabinet, cupboard or storage units easy to reach	1	2	3	8
73.2	adequate lighting	1	2	3	9
73.3	easy-to-open cabinet	1	2	3	10
73.4	medicine cabinet beside rather than above the sink or toilet	1	2	3	11

COMMENTS_____

ASSISTIVE DEVICES USED:	N	Y	
Grab bars 1;	1	2	12
2 or more;	1	2	13
clamp on tub	1	2	14
Bath seat/bench	1	2	15
Hydraulic/mechanical bath lift	1	2	16
Raised toilet seat	1	2	17
Commode/Urinal	1	2	18
Adapted Handles	1	2	19
Adapted lightswitches	1	2	20
Dressing Aids	1	2	21
Jar Openers	1	2	22
Wheelchair	1	2	23
Walker	1	2	24
Cane(s)/Crutches	1	2	25
Other _____	1	2	26

_____

END OF RECORD 9

APPENDIX G - HOME CARE BILLING STATUS FORM

Please indicate which Income Category includes the combined annual **net income** of all adult members of your family?

Income		Income Category
Annual	Monthly Equivalent	
$ 0 to $11,000	$ 0 to $ 917	001
$11,001 to $15,456	$ 917 to $1,288	002
$15,457 to $30,912	$1,288 to $2,576	003
$30,913 to $36,060	$2,576 to $3,005	004
$36,061 to $41,208	$3,005 to $3,434	005
$41,209 to $46,356	$3,434 to $3,863	006
$46,357 to $51,504	$3,863 to $4,292	007
$51,505 to $56,652	$4,292 to $4,721	008
$56,653 to $61,800	$4,721 to $5,150	009
$61,801 to $66,948	$5,150 to $5,579	010
$66,949 to $72,096	$5,579 to $6,008	011
$72,097 to $77,244	$6,008 to $6,437	012
$77,245 OR MORE	$6,437 OR MORE	013